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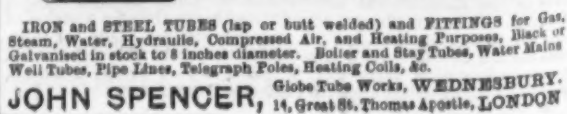
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For Index to Advertisements see Page 446.

For Literary Contents see Page 458.

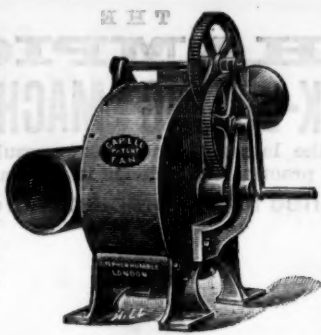
(THOSE WITHOUT NUMBER OF PAGE DO NOT APPEAR IN THIS ISSUE.)

	PAGE.		PAGE.		PAGE.
Aird, J.	472	Fraser and Chalmers (Ltd.) ...	445	Pass and Son ...	458
Asbury Railway Carriage and Iron Co. (Ltd.)	472	Frictionless Engine Packing Company	445	Phosphor Bronze Co. (Ltd.) ...	458
Austin, J. B.	445	Galloway's (Ltd.) ...	445	Piggott and Co.	448
Bandell, H. E.	445	Gates Ironworks Co.	445	Publications ...	468
Bank of Africa, (Ltd.) ...	467	Gilks and Co.	445	Pulsometer Engineering Co.	468
Banking ...	445	Greening and Sons (Ltd.) ...	445	Robey and Co.	445
Barter and Co.	445	Green, G.	445	Roburite Explosives Co. (Ltd.) ...	471
Benett, Sons, and Co.	472	Green, J. G.	445	Ropeways Syndicate ...	468
Bowen-Scott and Western ...	445	Halse, E.	445	Rose, James ...	468
Burwell and Co.	445	Harvey and Co. (Ltd.) ...	445	Sales by Auction ...	467
Bute Works Supply Company (Limited)	453	Hett, C. L.	445	Schuman and Co.	448
Business Cards ...	469	Holman Bros.	449	Seward, William ...	445
Calvert, Albert E.	445	Holmes, S.	445	Shipping ...	467
Cannock Chase Colliery Company ...	445	Humboldt Engineering Works Co. ...	445	Smith, Chas.	445
Cassell Gold Extracting Co. (Ltd.) ...	469	Humble, S. Jun.	445	South African Trust and Finance Co. (Ltd.)	445
Champion Rock Borer Co.	448	Huntington, Professor ...	445	Spencer, John ...	449
Charleston, A. G.	445	Ingersoll-Sergeant Drill Co. of America,	445	Stanley, W. F.	449
Clarkson, T.	449	Ireland, James ...	445	Stewart and Clydesdale ...	449
Clarkson-Stansfeld Concentrator (Ltd.) ...	445	Jones, J. A.	445	Tacknote ...	468
Commercial Stock and Share Corporation	467	Jose, Ford and Co.	445	Tangyes Limited ...	468
Companies and Legal Announcements	445	Kitto, B.	445	To Lot ...	467
Conforth and Co.	472	Krupp Grusonwerk ...	445	Tuck and Co. (Ltd.) ...	468
Cotton Powder Co. (Ltd.) ...	445	Larmuth, T., and Co.	445	United Asbestos Co. (Ltd.) ...	459
Davey, Paxman and Co.	450	Lancashire Patent Belting Co.	445	Unity Safety Fuse Co.	445
Davies, Henry ...	445	Lancaster and Tonge ...	445	Vivian's Boring Co. (Ltd.) ...	445
Davis and Son ...	445	Lewis and Sons ...	445	Walker Brothers ...	445
Daw, A. and Z.	445	Lloyd and Lloyd ...	445	Walters, W. M., and Co.	445
Daw, A. and Z.	445	Maclean, J. Grant ...	445	Wanted ...	467
Delta Metal Co. (Ltd.) ...	443	Marsden, H. R.	445	Watson, F. and Co.	445
Dixon and Co.	447	Martin and Pethybridge ...	445	Wellington and Co.	471
Dixon and Corbett and R. S. Newall and Co. (Ltd.)	447	Merry and Co.	445	Westhead, J. H.	445
Duncan and Co.	448	Merton and Co.	445	White, William ...	445
Edlman, Sons, and Co.	467	Nobel's Explosives Co. (Ltd.) ...	445	Wiggin and Co. (Ltd.) ...	445
Entertainments ...	445	Osborn and Co.	445	Wood, Charles ...	445
Espe and Co. (Ltd.) ...	445	Pacific Mining Agency and Trust Company...	445		
Feiten and Galleaume ...	467	Parkin ...	445		
For Sale ...	445				
Francis and Jenkins ...	445				



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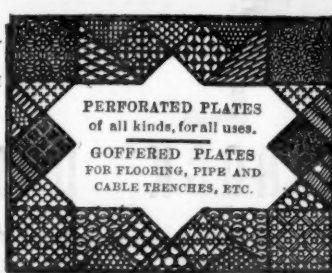
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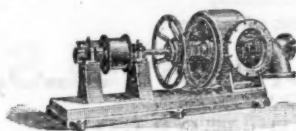
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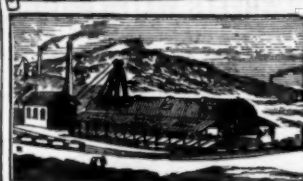
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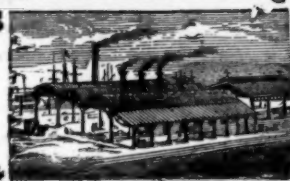
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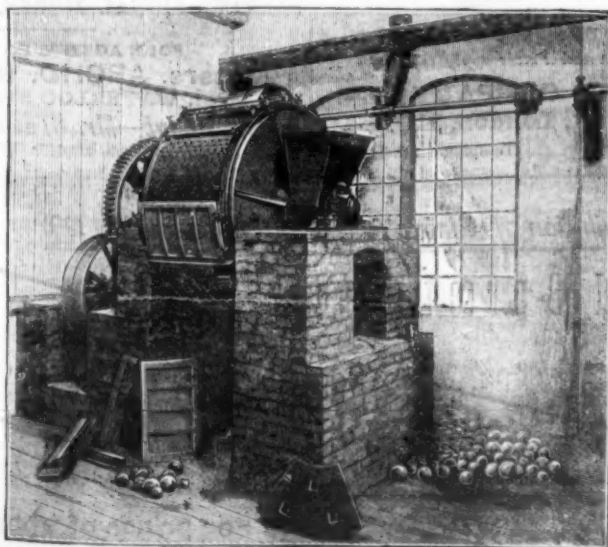
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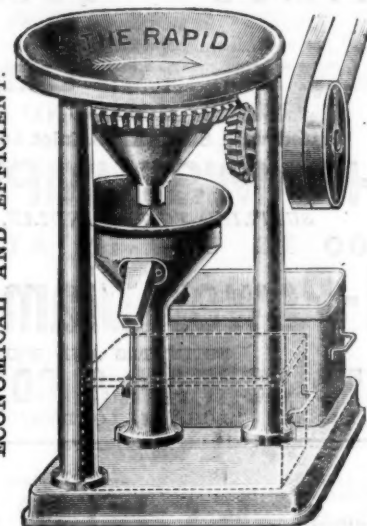
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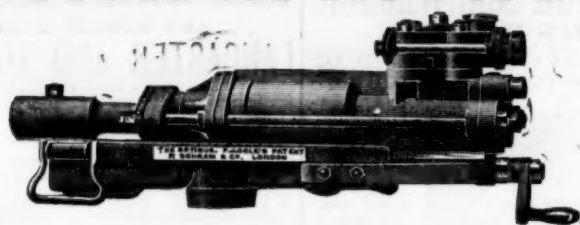
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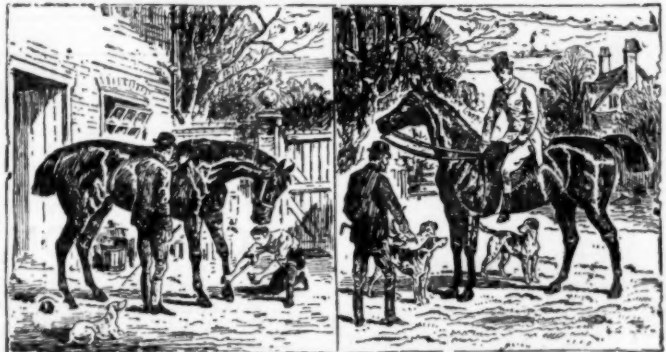
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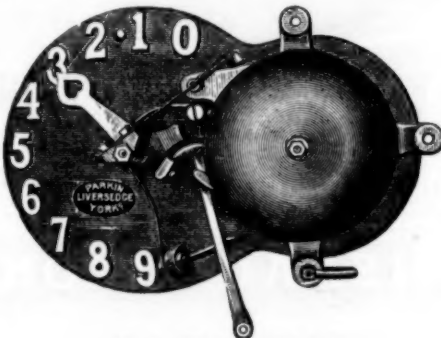
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Gold Medal, International Exhibition, Paris, 1889.

Gold Medal, Exhibition of Mining & Metallurgy, London, 1890.

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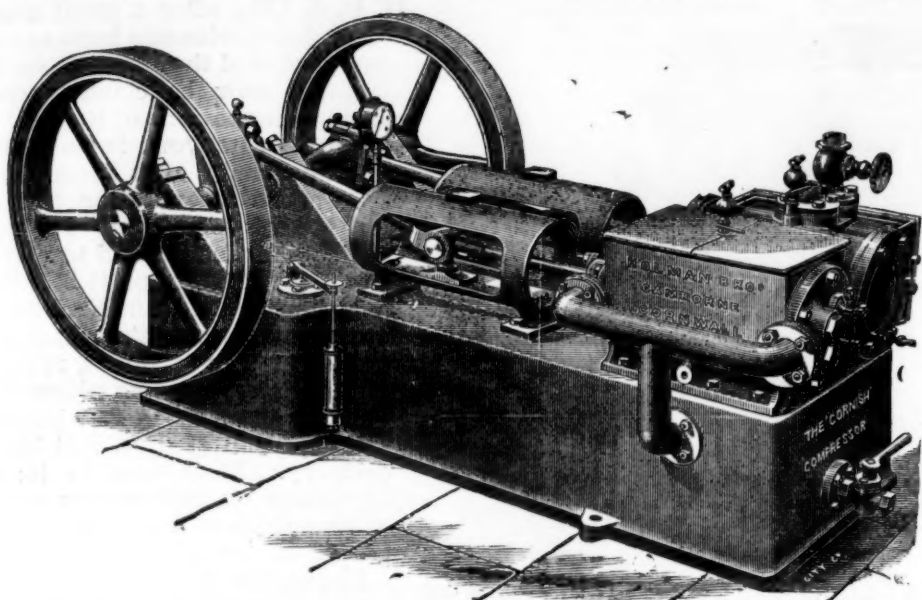
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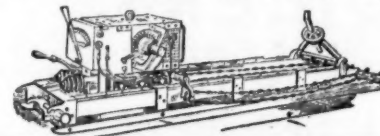
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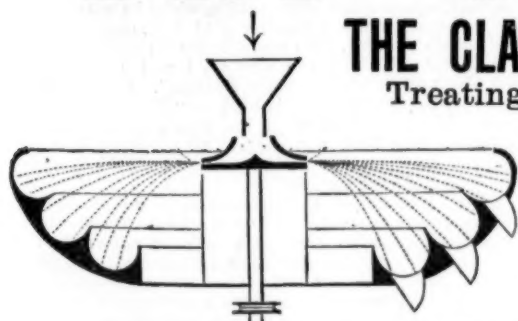
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GOLD MEDAL, Inventions Exhibition, 1885
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Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black
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NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining
 Metallurgical, Engineering, Railway and kindred matters,
 specially compiled from official sources for the "Mining
 Journal" by Messrs Rayner and Company, Patent Agents,
 37, Chancery Lane, London, W.C., who will forward all in-
 formation regarding them free on application.

- 6991 John Jagger, 70, Market Street, Manchester.—Improvements in and connected with rotary engines, blowers, and similar apparatus.—April 9.
- 7001 Thomas Aylliffe Loveband, Dowls.—Improvements in the tube arrange-
 ments of water tube steam boilers.—April 9.
- 7011 Joseph Towson, 41, Blisle Road, Yarmouth.—Improvements in steam
 engines.—April 9.
- 7027 Louis Wagner and John Marr, 115, Cannon Street, London.—New or im-
 proved process and apparatus for purifying liquids.—April 9.
- 7031 William Henry Taylor, 80, Queen Victoria Street, London.—Prevention
 of boiler explosions and leakage of pipes.—April 9.
- 7032 George Harding, 253, Brecknock Road, Tufnell Park, London.—Boiler
 safety valve.—April 9.
- 7069 Fernando Aisina, commonly called Fernando Aisina Parellada, 18, Buck-
 ingham Street Strand.—Improvements relating to the manufacture
 and packing of flange joints.—April 9.
- 7083 William Taylor, 11, Burlington Chambers, Birmingham.—Improved grip
 or safety device for use with mine cages.—April 10.
- 7119 Horace Bigelow Gale, 77, Chancery Lane, London.—Improvements in
 and relating to speed and power regulators for motors.—April 10.
- 7139 Thomas Green, 55, Chancery Lane, London.—Improvements in rotary
 blowers or pumps.—April 10.
- 7144 James Allen Lowe, 6, Bream's Buildings, London.—Improvements in
 wrenches.—April 10.
- 7181 William Drewett, 225, High Holborn, London.—Improvements in or
 relating to valve mechanism for engines.—April 10.
- 7209 Richard Radford, 15, St. James' Row, Sheffield.—Improvements in steam
 generators.—April 11.
- 7216 Howard Vivian Coad, London.—Improved safety arrangement for electric
 miners' lamps.—April 11.
- 7217 Henry John Moses Mellor, 75, Fleet Street, London.—Improvements in
 or relating to gas, petroleum, and like engines.—April 11.
- 7221 Wilfred Le Fautrier de St. 19, Tivoli Place, Cheltenham.—Improvements
 in gas and oil motor engines.—April 11.
- 7226 Daniel McGill, London.—An improved method of means for the compres-
 sion of air or other gas.—April 11.

SPECIFICATIONS PUBLISHED.

5887, Daglish and Windus, winding, &c. engines, 1893; 8204, Lewis, miners'
 lamps, 1893; 8855, Gispel, steam boilers, 1893; 10,388, Thompson, steam engine
 valve, 1893; 12,910, Ingham, blast furnaces, &c., 1893; 22,242, Coombe and
 others, steam traps, 1893; 24,582, Tullis, power drilling machines, 1893; 24,898,
 Lyaght, rolling thin steel sheets, 1893.
 The above specifications published may be had of Messrs. Rayner and Company,
 37, Chancery Lane, London, at 10d. each including postage.

CONTRACTS OPEN:

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 NEERING WORK, STORES, &c.

* * We shall be obliged by being promptly placed in possession of particulars
 regarding contracts open for competition, and of the results of successful
 tenders. In the latter case contract prices should be given.

The date given is that by which tenders must be delivered, in nearly all cases further
 information can be obtained on application at the addresses given. In applying
 for such the name of "The Mining Journal" should be mentioned as the original
 source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Various Railway Stores, May 1 (Tender).—For the supply of various
 stores for the engineers office for the Tralee and Dingle Railway Company,
 including sleepers, crossing timbers, shovels, picks, bracks, &c. Tenders to be
 received up to May 1. Particulars on application to Mr. S. A. E. Hickson, C.E.,
 Denny Street, Tralee.

Hydraulic Machinery, May 1 (Bolton).—For hydraulic machinery for
 overhead railway siding, comprising engine, pumps, accumulator, tanks, and
 pipes. Particulars to be obtained on application to Mr. William Smith, gas
 engineer, Lum Street Works, Bolton. Designs, with tenders, under cover
 (endorsed "Tender for Hydraulic Machinery") to be sent to Mr. Alderman J.
 Miles, Chairman, Gas Offices, Bolton.

Rails, May 1 (Liverpool).—For the supply of 2000 tons of Bessemer steel
 rails, for the Cues-hire Lines Committee. Specimens may be seen and forms of
 tender obtained on application to the engineer, Mr. W. G. Scott, C.E., Central
 Station, Liverpool.

Railway Fittings May 2 (London, E.C.).—For the supply and delivery of
 steel underframes for carriages and wagons, colliery tubs, brass boiler tubes,
 miscellaneous tools and stores and panel plates for the East Indian Railway
 Company as per specifications and drawings to be seen at the company's offices.
 Tenders to be sent to Mr. A. P. Dunstan, secretary, Nicholas Lane,
 London, E.C.

Pump, May 2 (Lusk, Co. Dublin).—For supplying and erecting over a
 well at Dermotstown a cast-iron pump of the best quality, fitted with 3 1/2 inch
 best brass working boxes, malleable iron handle and steel pins, for the Guardians of
 Ballyrobert Union. Sealed tenders addressed to the Board of Guardians will be
 received by Mr. James Stack, executive sanitary officer, Board Room, Lusk,
 Co. Dublin. Security will be required.

Railway Construction, May 15 (Ellon, Aberdeen).—For the construction of
 the Cruden Railway in Aberdeenshire, commencing at the Ellon Station on the
 company's Buchan line, and terminating at Boddan, which will be nearly 15 1/2
 miles in length for the Great North of Scotland Railway Company. An assistant
 engineer will be at Ellon Station at 10 a.m. on May 1, to accompany intending
 contractors over the ground. Plans, sections, and specifications to be seen on
 and after 24th inst. at the office of Mr. Patrick M. Barnett, C.E., Waterloo
 Station, Aberdeen.

Iron Fencing (Wilkinson, Lancs.).—For about 570 yards of wrought-iron
 fencing and sundry gates for the Wilkinson Local Board. Particulars of
 Mr. A. H. Mountain, A.M.I.C.E., Town Hall, Wilkinson, Manchester.
 Widening and Sinking (near Derby).—For widening and sinking at
 Kilburn Colliery, near Derby. For specifications, apply Kilburn Colliery
 Company.

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future
 be answered in this column and not through the medium of the post. All
 questions and replies should be accompanied by the name and address of
 the writer.

REPLIES.

- R. M.—You need not hesitate a moment.
- M. E.—It is a very promising country, and no doubt we shall hear
 more of it at an early date.
- M. G.—Thanks for circular; it appears very interesting.
- J. R.—In May, 1892.
- L. R.—You will find all the information you require in another
 column.
- INK.—1. Not at present. We think it would be advisable to wait
 and see how the property in California turns out.—2. We think
 the prospects are fairly good.—3. A dividend of 1s. per share
 was paid in September last.
- WALTER.—We do not anticipate such a thing. The sooner you rid
 yourself of such a delusion the better.
- W. M.—It certainly looks a promising country.
- M. N.—You have our best wishes. We hope you will be successful.
- JOHN.—We have never heard of such a concern.
- ANXIOUS.—The shares should not be touched.
- R. H.—We should advise you to hold.
- N. N.—You are undoubtedly liable.
- G. A.—It is a doubtful speculation.
- DUBIOUS.—We do not think you will gain by holding.

THE BURMA RUBY MINES.—Major Bethune, a director of the
 company, has arrived in Calcutta for the purpose of submitting
 certain proposals to the Government of India with regard to reducing
 the royalty annually demanded by the State, and as the Chief Com-
 missioner's report is also in the hands of the Government, mean-
 while the company are determined to suspend operations unless a
 substantial reduction is made.

DAVEY, PAXMAN & Co.,

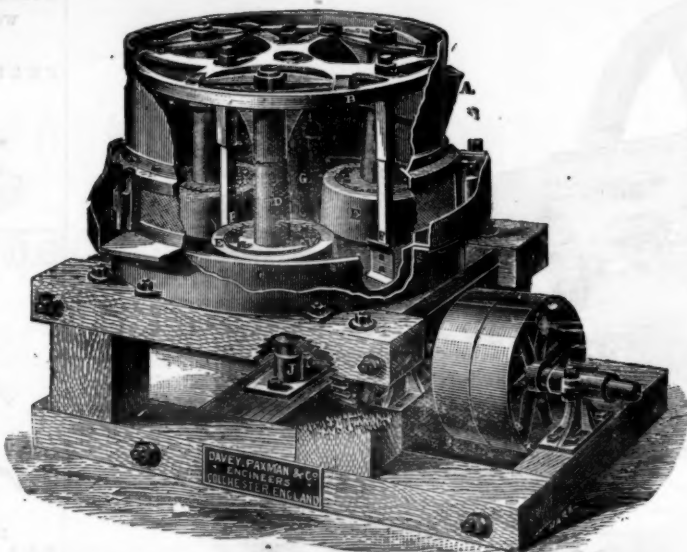
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MACHINERY FOR MINING.

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Telegraphic Address:

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Huntington's Patent Centrifugal Roller Quartz Mill for fine pulverizing in Concentration.

LONDON OFFICE

D. P. & Co., after a great number of careful experiments have so improved and perfected the Huntington Mill that it must now be classed among the greatest inventions of the age. The excellence of its work is undoubted, and its superiority over Stamp Mills will soon cause a revolution in its favour for Quartz Crushing. Its first cost, and cost for freight and transit is much less than for stamps, it absorbs about half the power for the same output, and is continually crushing. It can be fixed and started in 12 hours, requiring for foundations only two pieces of timber 12 in. by 12 in. by 14 feet long, is more reliable than stamps, and has perfect delivery. It is used to its greatest advantage on gold quartz, for, because of its excellent amalgamating properties, it catches about 75 per cent. of the gold put into it.

Full Particulars on Application to
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MECHANICAL ENGINEERING: MACHINERY, MINING and RAILWAY PLANT, &c.

Illustrated Descriptions of New and Standard Mechanical Appliances, Accessories and Processes, adapted to Mining, Metallurgical, Railway, Engineering and other Industrial Purposes.

A NEW GAS EXHAUSTER.

AFTER protracted experiment and the introduction of multitudinous improvements, Messrs. Roots have at length produced a new gas exhauster which is said to realise their most sanguine expectations.

It is claimed for the "Acme" exhauster that it is the simplest in construction of any exhauster in use. The internal operating parts consist simply of two revolvers, each cast entire in one piece, without bolts, nuts, screws, or washers, or any other parts that can by any possibility get loose and cause trouble or injury. All parts of the machine requiring attention—for instance, journals, gearing, and packing boxes—are external, and can be observed and attended to; the internal parts requiring no care

amount of friction and wear is thus confined to the journals and gearing, and the power required to operate the machine is reduced to a minimum, with a corresponding increase in the durability of the exhauster.

The revolvers or pistons of the "Acme" gas exhauster are constructed upon entirely new principles, and their form is a radical change from the other styles of Roots' exhausters. They keep up a mathematically accurate contact with each other and the case during the entire revolution, consequently all the gas taken in is positively forced forward against any back pressure whatever, in a steady uniform flow, making an even and regular record either in vacuum or pressure gauges.

The cylindrical parts of the case are bored out with perfect accuracy, no packing strips, as used in previous machines, are employed, and the internal parts of the exhauster require no attention whatever, and any adjustments, repairs, or even renewals, can easily be made from the outside. The advantage of these arrangements will be easily understood by those who have had experience with those constructions in which the parts requiring attention and repairs are internal, and can only be reached by taking the machine apart, perhaps during the night, and finding them covered with coal tar and in danger of explosion, from leakage of gas, if lights are used.

The spindles, upon which the revolvers are hung, are of steel, and owing to the improved shape of the waist of the revolver, a much stouter spindle than formerly is used; moreover, provision is made by enlarging the shafts where passing the head plates and stuffing boxes, to enable them to be re-turned, if necessary, in cases where the surface has become roughened through the action of an acid in the residuum or coal tar. The gear wheels are cut out of the solid by machinery, and are run in oil wells, reducing the friction and wear to a minimum. By this arrangement, together with the absence of back lash, there is no noise from the working of the exhauster. Provision is made for the escape of the coal tar which may pass into the cylinder, and it is impossible for the tar to reach the journals and oil wells, which are placed outside of the stuffing boxes.

Owing to the perfect mechanical construction of the "Acme" exhauster, the heavy steel shafting running in long phosphor bronze bearings, with gearing cut in the most perfect and accurate manner, and each revolver being correctly balanced, the machine absorbs very little power compared with the working results.

MESSRS. JOHN DAVIS AND SON'S NEW CATALOGUE.—Messrs. John Davis and Son, of All Saint's Works, Derby, the well-known manufacturers of mining, surveying, engineering, mathematical instruments, miners' safety-lamps, &c., have issued a new catalogue. Little need be said, of course, in commendation of the work turned out by this firm, seeing that their reputation has been established for so long a time, and is almost world wide. A catalogue of their specialties is always sufficient to excite interest, and is even worthy of serious perusal. To enumerate the many articles described and illustrated in the present catalogue would occupy too much of our space. We would advise readers to secure a copy for themselves. In consequence of the great development of the firm's works, particularly in electrical engineering, they have found it necessary to group the management under two heads, and to publish two distinct catalogues representing the two departments. Catalogue A represents their manufactures in mining, surveying, engineering, mathematical, meteorological instruments, miners' safety-lamps, &c., and catalogue B, the electrical engineering department, and contains prices, specimen estimates, &c., of plants for electric lighting, electric transmission of power, plants for hauling, coal-cutting, drilling, pumping, electric signals, electric blasting apparatus, electric light fittings, &c.

MINING IN MASHONALAND.

EXHIBITION OF ROCK SPECIMENS AND LECTURE.

AT the Geological Society's meeting held at Burlington House on Wednesday, Mr. A. R. Sawyer, F.G.S., &c., late Her Majesty's Inspector of Mines, exhibited a large collection of rock specimens from Mashonaland, and a few from Matabeleland, with rock slides of the most important ones.

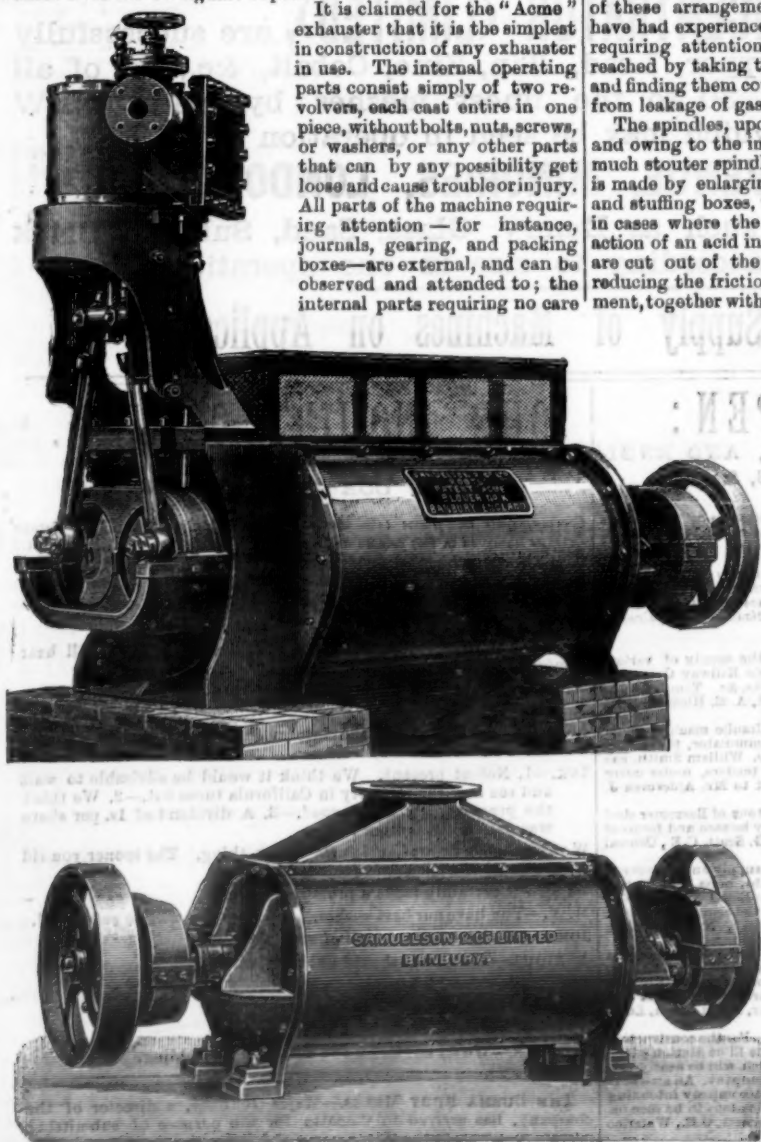
He stated that those on the Matabeleland side of Mashonaland were collected by him, so to speak, with a rifle in one hand and his hammer in the other, as he was there during the war. The Chartered Company's forces had entered Matabeleland, and were proceeding along the Matopo hills, whilst he was conducting his examination of the Victoria gold field, uncertain as to the result of their action. He was actually on the 50 per cent. kopje in Matabeleland on the very day that the engagement occurred, about 50 miles away at the Shangani. He hoped that this would be an excuse if in his book on "The Gold Fields of Mashonaland," which is now in the Press, any inaccuracies should occur. The book will contain 20 geological plans and sections, and a complete list and a description of Mr. Sawyer's 500 specimens and rock sections.

The general foundation of Mashonaland, he said, consists of gneisses and granitic gneisses, with more or less extensive patches of schistose rocks, with some volcanic tuffs and ashes and a few stratified rocks. The schistose rocks are for the most part sheared and altered igneous masses. There are numerous examples of dolerites and epidiorites passing into hornblende schists, and of acid igneous rocks passing into chlorite and talcose schists.

The masses of magnetite which occur in various parts of Mashonaland and the serpentinous rocks, which occur plentifully in the north-western corner of the Victoria gold field, probably owe their origin to alterations of ultra basic rocks containing much olivine. Extremely auriferous veins occur amongst the sheared acid igneous rocks of the Umhungwe Valley in the Manica district, and gold occurs in the kaolin produced by the disintegration of these rocks.

Amongst the Free State rocks shown, he referred to a flint breccia obtained from a depth of about 500 feet in a borehole, which he had advised should be put down near Viljoensdrift station, and which underlies a valuable coal formation. The dwyka conglomerate from the Prince Albert district in the Cape Colony, specimens of which were exhibited, would be interesting in view of the interest attaching to that deposit. His views on that deposit were stated in a report which he made for the Cape Government last year on the mineral resources of the Prince Albert division.

HIGHER INSTRUCTION IN MINING.—Arrangements have been made, says the *Engineering and Iron Trades' Advertiser*, with University College, Nottingham, for a two years' course of higher instruction in mining, to be conducted on Saturday afternoons, from September to May of each year, to enable students to obtain the first and second class colliery managers' certificate, also the mining certificate granted by the Department of Science and Art. In the division of science as applied to mining, Professor Robinson, M.E., will give instruction in mechanics; Professor Clower, D.Sc., in chemistry; Professor Heaton, M.A., in physics; and Professor Carr, M.A., in geology. For engineering drawing a teacher will be provided by the college, and the class for practical mining will be under the direction of Mr. Charles Latham. A course of advanced classes in mining will also be carried out at Firth College, Sheffield. The fee for the course at Firth College, Sheffield, or University College, Nottingham, is three guineas, but in consideration of a grant from the County Council, members of the Nottingham mining classes, and residents in the county, will have the privilege of attending the course at University College, Nottingham, on payment of a reduced fee of 1½ guineas. The County Council propose to award eight free scholarships to students who have passed the elementary, advanced and honours stages in the county mining classes, such scholarships being tenable at either Firth College, Sheffield, or University College, Nottingham, at the option of the successful candidates, subject to the approval of the committee, and to provide for the payment of the college fees (£3 3s. per year), the purchase of necessary books not exceeding the value of £2 per year, and the payment of third-class railway fare to and from Sheffield or Nottingham, to an amount not exceeding £3 per year, provided holders of scholarships make at least two-thirds of the possible attendance, and sit for examination



or attention whatever. As the internal operating parts do not move in actual contact, but yet so closely as to be practically gas tight, and as there are no valves sliding under pressure, the small

SPECIAL CORRESPONDENCE:

COLONIAL AND FOREIGN.

MINING IN SPAIN (ASTURIAS).

THE IRON ORES OF THE DEVONIAN SERIES.

(FROM OUR OWN CORRESPONDENT).

GIRON, APRIL 13, 1894.

THERE are some places worthy of note in the Devonian formation of this province, owing to the importance of its iron ore zones, which may at a future day be of interest to those manufacturers of steel and iron, who to-day depending mostly on the immense deposits in Biscay, may afterwards have to look for other sources to supply their requirements.

The deposits in the Devonian of this province have been known for a long series of years, but unfortunately, owing to the configuration of the country, and the consequent difficulties of transport to a seaport, they have been left severely alone. To-day a network of narrow gauge railways are in study, and in a very short period these will become an accomplished fact, through their absolute want being felt by large capitalists, owners of collieries, who are not afraid of outlaying their money on their construction.

These iron ore deposits will be an increasing valuable factor in their transport entries, and the new shipping ports of Concha de Arredo and Aviles will permit their exportation under economical conditions, and with an unrivalled advantage to the owners.

One of these mines is situated to the north of an interesting village called San Roman, distant from this village about 2 kilometres, high up a steep mountain side, having an extensive cap of Devonian limestone. This forms the roof of a fine deposit of practically pure fibrous hematite, solid and hard, which dips into the mountain in the direction of the run of the limestone. A local ironworks' company some 20 years ago, in its search for a good ore for its uses, did some work on it. They opened up a horizontal face, 16 metres in length, by over 2 metres thick, without bottoming, but they found that the cartage was too severe an item, and that it suited them better to import ore from Bilbao. They allowed it to remain as it was, and their title to lapse, not foreseeing that ultimately it must of necessity become important.

The new railway from Trubia to Concha de Arredo will run within 2 kilometres of this, and as one of the interested parties in the railway has secured it, he will, of course, place a siding and loading stage at the foot of the hill, to receive the ore into trucks as it is carried down by a cable line to the spot. Railway transport from thence to free on board ship at Concha de Arredo will not exceed two pesetas per ton. This Concha de Arredo will be a port where steamers of two or more thousand tons can load as soon as the iron pier is constructed, so that freight will always be low.

Other mines of the quality of the ore referred to in the communication published in the *Journal* of the 24th of March of this year, have also been secured in the Pravia district, within 200 metres of the new railway, that will permit the ore in large quantities being put f.o.b. in the above-named port at about four pesetas per ton. Although this last is contaminated with phosphorus, and has a high percentage of silica, still its 48 to 50 per cent. of iron may be an inducement to foreign smelters, in view of its low cost, to find a way of smelting it, where cheap fuel exists, and a flux containing a good percentage of magnesia. There would be nothing extraordinary in this, as it is done daily in the steel and ironworks of this province.

In the communication published in the *Journal* of June 13, 1891, reference was made to a good iron ore deposit within a reasonable distance of Trubia, very similar in appearance to Somorostro Campanil, but lower in iron contents and low in silica.

Since that date a good quantity of this has been worked to supply the ironworks in the province. The railway above referred to will pass through Trubia, and there will be no difficulty about transport and shipment of this ore at a cheap rate. A cable from the mines to the station at Trubia will convey this to railway trucks at a nominal cost. The value of these mines will be greatly augmented by the construction of this railway, and their owners already foresee this. The average of the iron contents of this ore is about 48 per cent.

There are extensive bodies, too, of good iron ore in Teverga. These are further away from the railway (about 12 kilometres from the Trubia railway station), but yet they are within an economic distance, and a steam tramway could be economically laid to them. These latter are in conjunction with abundant and good coal in the same district, and may be worked to supply furnaces on the spot, as there is abundant water power, a supply of limestone for fluxing, and fire-clay, so that all that would have to be transported would be pig-iron, which finds a ready market throughout the country, without reckoning with the exportation of it at a price that would compete, if so desired, with the product of any other ironworks. All this, however, is not in the Devonian, but in the carboniferous proper, which here lies concordantly on the Devonian that crops to the north of it in its vicinity.

The Devonian formation in Asturias is noted for its luxurious overgrowth of vegetation and timber. Its verdant appearance is in direct contrast with the bare, hungry, and grey one of the Cambrian and Silurian to the west of it. Its villages are more ornate, and one can at any rate find places where to eat and sleep with some degree of comfort, whilst plodding his weary way through the land.

Referring, again, to the first iron ore deposit mentioned above, it may be well to add that the village of San Roman is situated about eight kilometres to the south of the town of Pravia. This town is situated some six kilometres from the mouth of the River Navia, which is navigable for small craft nearly up to the town. The scenery around this town is so beautiful that it is a pity it is not better known. Here there are good hotels, and the principal inhabitants receive any stranger with open hand and heart, when he travels with a desire to admire the scenery, or on a scientific, or even a fishing expedition.

The Nalon yields abundant salmon and trout during the season, and, owing to its course being clear of wood, those who delight in the gentle art of Isak Walton would find this place a happy hunting ground for the practice of their piscatorial energies. The spotted lamprey also abounds. Those who prefer the smell of gunpowder, and the fiercer delights of the chase, would find ample exercise and risk in the hunt of the wild boar, which peoples the pine woods and chestnut grounds in the vicinity. These are the terror of the small cultivators, who on some occasions see eight and more of them decimating their tender maize crops, but are too much afraid of them to give them their congé. Hare and partridge are not scarce either.

Our next communication will deal with the carboniferous formation of this province, its vast coal deposits, and their exploitation.

MINING IN MEXICO.

LAW AND FINANCE.

BY J. HOWARD PALMER, B.A.

THE Mexican mining laws are nominally very strict indeed, and a foreign company working in the country can easily find itself in serious trouble from want of acquaintance with their provisions. Within the last two or three years the laws bearing on the industry have been completely remodelled, and it cannot be said that the changes made have been for the better. Under the old law every state in which mining was carried on possessed a *diputación de minería*, or Chamber of Mines, a body elected partly by the mine-owners themselves, and endowed with complete control over the whole industry. The method of acquiring a claim was by denouncement, and particulars had to be lodged with the Chamber which granted a title and gave possession upon surveys and proofs of the existence of a mineral vein. Such a claim, however, could only be held upon condition of doing a certain amount of work upon it, the minimum amount being the continuous employment of six men for six months of each year. If this assessment work was not performed, the claim was liable to be re-denounced by the first comer, and the original owner lost all his rights therein. The idea of this legislation was to prevent claims from falling into the hands of those unable or unwilling to work them and ensure the development of the mineral resources of the country. However, under the new law all this has been changed. The State Chambers of Mines have been abolished, and the Federal Government has substituted its own officials in their place. This, perhaps, is a reform, as the local chambers were apt to be partial and corrupt, but the worst part of the new law is that which imposes a yearly tax upon mining claims, and which abrogates the legal necessity for performing a assessment work. The manner in which the tax is computed is, to say the least of it, entirely unjust. Instead of being a percentage or royalty upon the amount of metal produced by any mine, the tax is levied upon the surface extent of the claims at the rate of \$10 per hectare (2½ acres) yearly. In this way a mine with a steep vein and compact ore body, worked by means of a vertical shaft, may pay comparatively nothing, whereas another mine with scattered ore bodies, long adits, and flat veins, will require a large extent of surface claims to protect the underground workings, and have to pay a tax entirely out of proportion to its output. To make up for the tax, assessment work is no longer required, as a claim is practically a freehold so long as the tax is paid. All political economy teaches the unsoundness of taxation upon the staple industry of a country, but the Republic had to find money somewhere two years ago, and the mines suffered accordingly. In other respects the mining laws have not been changed, and the Federal official in each district has very similar powers to the English Board of Trade. The provisions for the safety of the miners and for the proper working of a mine are excellent, and a dangerous mine may be reported to the authorities and forfeited partly to the Government, and partly to the informer, if no steps are taken to make the workings safe. Notice has to be given at once of all accidents and deaths from blasting, falls of rock, or failure of machinery, under penalty of a heavy fine for neglect of such notification. An enquiry is then held by the authorities, and any proved carelessness or incompetence punished by fine. There are also numerous regulations regarding the number of shafts or exits to the surface necessary according to the depth and extent of a mine, and others prescribing for inspection of the workings and hoisting gear by the authorities. Altogether, the regulations are salutary and sensible, and the officials are always anxious to give as little trouble as possible.

If a foreign company, however, tries to carry things with a high hand, their business is extremely likely to be hampered and delayed by vexatious litigation. The Mexicans all round are extremely fair to foreigners, but they expect them to conform to their laws, and strongly resent any attempts at evasion.

The blessed principle of Limited Liability is not known in Mexican mining; every property is divided into 24 *varas* or shares, the liability on which is unlimited. In starting a new mine the capital is called up from month to month so as just to keep level with the expenses of development, and once the mine is self-supporting no further outlay is required. In the case of calls remaining unpaid, a legal protest has to be made against the defaulting shares, after which they can be forfeited for the benefit of the remaining owners.

Very often all the *varas* are not on the same footing, as regards calls and dividends, and a great deal of mining is done on these terms. In the case of a mine stopped for want of capital, the original owners often surrender two-thirds of their interest, as *varas* *aviadas*, or active shares, to other parties who engage to work the property, and pay all expenses, with the proviso that the holders of the remaining third of the shares shall neither be liable to calls nor entitled to dividend until any fresh outlay has been reconquered, and the mine put on a paying basis. This system of working is analogous to that of a company with preference and deferred shares, but the value of these deferred shares or *varas en avío* is extremely problematical, as their holders lose all claim to a voice in the future management or expenditure on the mine.

Buying a mine from Mexican owners is a very ticklish piece of business on the score of getting a proper title, for there is no such thing as a transfer on the part of a representative of the company, but signatures of all the shareholders must be obtained before a valid contract can be made, and one *vara*, or 24th part, may be further subdivided. If the Mexican vendors are willing to retain part of the property *en avío* as sleeping partners there is a probability of the mine being a promising one, which hoisting or pumping machinery will render productive, but in any other case, if a property will not pay the Mexicans to work, it certainly is far less likely to be a good speculation for any foreigners. American companies especially have lost a great deal of money in the country through ignorance of the conditions and costs of mining, and in the effort to work big deep mines, which the natives had abandoned. There is plenty of native capital to work any payable proved deposit, and capital from abroad is only required to work mines which will not pay on a small scale, but which improved methods and a wide field of operations will render dividend paying. In the older fields the rich ores of 100 ounces per ton and over are long ago worked out, and what remains is the 20 to 30 ounce ore, which requires very careful economy if it is to return a decent profit.

* In the heading to the preceding article, through a printer's error, the words appeared, "The Patio Process of Modern Milling." It should obviously have been and not of.

The battery which has been lent to the Modderfontein Company by the Van Ryn is, it is said, about to be returned, and the former Company is stated to require about £50,000 for purchase of cyanide works, battery, &c. The condition of the Van Ryn is said to be improving.

REASONABLE GEOLOGY.

By FREDERICK DANVERS POWER, F.R.S., M.A.I.M.E.

IV.

(Concluded from page 394.)

THE antecedents of a deposit in one instance are not always necessary for its production in another, and certain indications—e.g., the presence of particular minerals, which are considered as favourable in the one case, might be just the opposite in the other. We must use provisional generalisation, for as Herbert Spencer says—"If we waited till all the facts were accumulated before trying to formulate them, the vast unorganised mass would be unmanageable." At the same time we must guard against the abuse of generalisation. To frame an hypothesis that cannot be verified, or to neglect its verification, leads to no result or to a fallacy, and this is why so many persons have such a strong antipathy to what they call "theory." An hypothesis must have at least two different facts; it may, however, agree with several observed facts, and still be wrong. Before deciding to accept it as true, we should test it in every conceivable way, and when possible verify it with our senses. It was owing to an hypothesis agreeing with certain observed facts and traditions that made our forefathers believe Noah's flood to be universal. From all countries we hear of extensive floods, and we find fossil remains of sea shells even on the tops of mountains. What more do we want? On more thorough examination the dates of the floods are found to be vague, or not to tally, and even at the present day we have extensive floods in all quarters of the globe. Then, again, the fossils are found to belong to various formations of different periods, and if we push the subject still further we discover that there is not enough water in connection with our globe to cover our hills, and if there were the rapid subsidence of such a body of water is inconceivable.

When an hypothesis agrees in several of its results, and when by its help we are enabled to predict certain things such as we would not otherwise have discovered or expected, then we may be almost sure that the hypothesis is correct. It was in this way that certain of our elements were predicted and discovered by thoughtful men who noticed blanks in the tables constructed from the periodic law. J. A. R. Newlands predicted the discovery of Germanium. Mendeleeff predicted Gallium, also Scandium; the latter, which he named Ekeboron, was discovered to exist by Nilsson in 1879. Uneducated miners often ask what good theory is to a geologist and state, that we seldom hear of a geologist discovering a valuable deposit, and that for every one a geologist finds, the so-called practical miner—in other words, the pick and shovel man—finds a score. No doubt this is true, and he might add that out of the score, nineteen were discovered by accident, and in many cases by persons—not always men—who had never done any mining before, or given the matter a thought. I have before me several examples of mines which originated in the unthinking action of a child, horse, duck, wombat, &c., and also of cases where the practical miner has looked away from valuable minerals, and passed by on the other side. When we consider the small percentage of geologists in the world compared with that of miners, and further take into account that very few of these devote their time to prospecting, it is no longer wonderful that we hear so little of finds by geologists. Many geologists are only sent to the field after a discovery has been made, and as soon as their inspection is over they have to leave to carry out other work without an opportunity of endeavouring to find new deposits. Mr. S. F. Emmons made a thorough investigation of the Leadville District, Colorado, for his monograph on those deposits. As a result he tendered certain advice to the miners; those who took it profited by it, but those who refused and thought they knew better, found out their mistake to their cost.

Many predictions have been made as to the presence of certain minerals in different localities which have been subsequently verified. R. J. Murchison (Q. J. G. S., Vol. VIII, page 134, and "Siluria," 3rd edition, page 489) prophesied the occurrence of gold in Australia; he made a slip, however, when, relying on the knowledge of auriferous deposits gained in the Urals, he said that we need not expect gold below a certain defined limit. Geologists often have this thrown in their faces; but those who always like to look on the worst side of things, forget that Murchison was always ready to acknowledge his mistake, and corrected it in subsequent writings. Professor T. W. E. David, of Sydney, foretold the presence of coal under that city; last year the 10 feet seam was struck by a bore at 2929 feet—i.e., within 30 feet of the depth David had calculated, which we must consider very good, as there was nothing to guide him nearer than 20 miles away. (*Engineering and Mining Journal*, Vol. LVI, page 636.) In 1816 Mr. N. J. Winch forecast the occurrence of salt in the Tees Valley, and it was discovered therein 1859. (T. G. S., Vol. V., page 543.) Captain Nichols found iron deposits in the Mesaba belt, Minnesota, in 1890, which had been predicted by the State Geologist and his assistants in 1888. (The Mesaba Iron Range, T. A. I. M. E., 1892.) Many similar instances are known to geologists which I need not repeat here.

Reason declares that which is hid from ordinary observation, or, as Dr. Robert Ball puts it—"When observation fails, our reason steps in and adds greatly to our information." Surely it is more manly to try and find out the causes of phenomena we see around us than to be satisfied with substituting a synonym for a reason, or evade the investigation by assuming a cause we do not understand, concluding that there must be some connection between two things we are almost ignorant of. Any one who descends to such deceptive reasoning, which, if he thinks, he must know is wrong, can have but little faith in himself or his conclusions, and had better join the ranks of those who believe in the obvious fallacy that if a little knowledge is a dangerous thing, a great deal of knowledge is still more so.

SOUTH AFRICAN EXHIBITION.—In view of the increasing interest manifested in all that relates to the continent of South Africa, the directors of the Crystal Palace have resolved to organise a South African Exhibition, to be opened early in May, 1895, which they trust will be so thoroughly representative and comprehensive that it will demonstrate, in a more complete form than has hitherto been possible, the rapid development of the arts, industries, and resources of this vast and important country. Not only will the exhibition illustrate the native industries and the great mineral wealth of this portion of the globe, but an attempt will also be made, by means of a peopled village or kraal erected in the grounds of the Crystal Palace to portray the manners, customs, mode of living and warfare, amusements, &c., of the natives. The directors invite the co-operation of well-established firms who have commercial relations with any of the South African colonies; they will also be happy to receive suggestions for their consideration from gentlemen who may have occupied official positions in those colonies, or who possess personal and practical knowledge concerning them.

THE METALLURGY OF LEAD.

By J. B. HANNAY.

(Continued from page 425.)

V. Lead Smelting.

IN applying the knowledge gained in the foregoing pages to the smelting of lead, the behaviour of galena under various conditions has to be kept in view, as the state of the lead ore which is being reduced is an important factor in the result produced.

There are two practical observations which we will find of great use in understanding the re-actions involved in smelting. These are:—

1. The ore is reduced in the rough state—i.e., in small pieces from the size of a split pea to that of a marble, but the larger pieces de-capitate on heating, so that the sizes may be stated as from a split pea to coarse sand, but the smelters find the coarsest ore easiest to work, and to give the best results. Now, when the fineness is extreme, as in "alimes," the trouble of smelting is enormously increased, and the results obtained are the worst, quite irrespective of the increased impurity in the finer ore.

2. Sulphate of lead is the smelter's worst enemy.

I shall endeavour to show that these two propositions amount to one and the same thing.

When a small piece of galena is heated before a blow-pipe flame, a little fume is given off, showing that the sulphur is being burned out, while the surface of the piece will become coated with a liquid like lead, but no sulphate is formed, except a small trace of fume, which condenses on surrounding surfaces, and stains them white, giving an erroneous impression that the solid PbS is being oxidised to PbSO₄.

On continuing the heating the liquid portion will increase, and this will go on, the solid beneath growing less till all is liquefied.

This liquefaction is not due to rise of temperature, but to the burning out of the sulphur yielding sub-sulphurised lead of a lower melting point. When the film of lead is formed on the surface, it dissolves the underlying sulphide, and brings it to the surface to become desulphurised in turn till most of the sulphur is burnt out. If the piece be cooled before all the sulphur is burnt out and reheated, a curious action will be seen. Beads of pure metallic lead will be seen rapidly exuding and trickling down, leaving a more highly sulphurised compound behind, exactly as shown by the last member of the fractionation which yields metallic lead. But there is something more than this going on. As the metallic lead is trickling out and leaving a sub-sulphurised skeleton, that skeleton is absorbing oxygen and forming the PbS.PbO compound, and thus the formation of slag has commenced. Were it not for this oxy-sulphide, the galena might be alternately oxidised and fractionated into SO₂ and lead, and the products would be entirely lead, sulphur dioxide, and fume.

So much for galena in pieces. Now let us see what goes on when the galena is in very fine powder.

If very quickly heated the liquid portions of the larger particles coalesce and act very much as above, so we need not consider this case. If slowly heated, very little SO₂ is evolved, but oxygen is absorbed, and at the end of an hour the colour is seen to be growing lighter, and after two hours the whole may be converted into sulphate. It is impossible to get the theoretical yield, as some fume is formed in spite of precautions, but by careful roasting I have obtained 115 per cent. of white sulphate of lead out of a possible 126 per cent., and by taking longer time and a lower temperature higher results might no doubt be obtained.

Now this reaction is the second cause of the formation of slag, as the sulphate of lead produced necessitates the use of a higher temperature in "melting down" the charge in the furnace, and thus more oxidation takes place. Besides, the PbSO₄ is partly decomposed by the PbS into litharge, and so the galena instead of being converted into lead is used up in two deleterious reactions, first reducing PbSO₄ to PbO, and second forming PbS.PbO with the PbO produced. I have proved in several different ways that the reaction, PbSO₄ + PbS = 2Pb + 2SO₂ (which is always put forward as the total explanation of lead smelting) has no existence, and does not take place in any circumstances which I have been able to bring about.

But the most complete contradiction to this reaction is given by the lead smelters themselves. The fume which they condense in their long flues is composed principally of PbSO₄, so that if the above were true, the best thing a lead smelter could do would be to mix this fume with galena in the required proportions, when, on heating, lead would result. But lead smelters know better than that. Were anyone to propose to put lead fume amongst good ore he would be considered to be mad, or trying a practical joke, as no greater calamity could happen to a smelter. The charge would simply be ruined.

The smelter treats his fume on the slag hearth, mixing it with fuel, and the reaction is that of PbSO₄ with C, equation 24.

With these explanations we will now follow a smelting operation. I have carefully watched the whole operation of smelting many times, and although different workmen use slightly different methods of treatment, I have noted that the main stages are always the same, and these are:—

1. A roasting for two to four hours at a barely visible red heat, during which neither litharge nor sulphate of lead is produced, but sulphur is burnt out, and carries with it some PbS as PbS₂O₃. During this stage no fusion or even pastiness is allowed to take place, and at the end the temperature is generally allowed to decline.

2. The temperature is sharply raised, and lead trickles out as mentioned above, and the slag rapidly forms and runs down on the top of the lead.

The remaining operations are directed towards removing the last traces of sulphide of lead from the slag, but practically no more lead is obtained. The reason for this removal of the sulphide is that if any is left in, the subsequent treatment of the slag in the blast furnace or slag hearth is rendered difficult, and much fume is produced, whereas a well oxidised slag is easily treated in the slag hearth.

In order that it may not be supposed that I have observed the furnace reactions with any theoretical bias, I will quote Percy's description, as it accurately represents the custom of the majority of smelters.

I have numbered the stages so as to refer to them later on. (Stage I.) On page 229 he says 21 cwt. are charged into the furnace barely red hot. It is spread evenly out and stirred occasionally for two hours. The temperature is kept as high as is compatible with absence of clotting or pastiness.

(Stage II.) Then the temperature is raised till the whole is semi-liquid, and the charge raked up from the tap hole to the upper part of the furnace.

(Stage III.) The temperature is lowered to a stiff paste, and the whole pushed towards the bridge and the back of the furnace. [This has taken about four hours, and there is no separation of lead yet.]

(Stage IV.) The temperature is quickly raised, and lead flows freely, and the whole is melted down into the lead well.

(Stage V.) Slaked lime (others use lime and charcoal) is thrown in to thicken the slag, which is pushed off the lead, and set up round the sides and left to cool, and again remelted. Sometimes lime is again added and the last treatment repeated. Now all through his work Percy assumes that the roasting forms sulphate of lead, which reacts with the sulphide to form sulphur dioxide and metallic lead, but I have shown that neither by adding sulphide to molten sulphate (or vice versa), nor by fusing any mixture of the two does any such reaction take place. But there are several other disproofs of any such reaction. In the first place, if it were true, smelters would mix the sulphate fume with ore to aid in the smelting, but any such addition would be fatal to the making of lead. Another disproof lies in the fact that sulphate and sulphide do not react till the fusing point of one is reached, and as that temperature is nearly a white heat, any such temperature in a lead furnace would

be entirely out of the question, as it would flux all the brick. Lastly, as the preliminary roasting has reduced the sulphur to 3 to 5 per cent., there is plenty of free lead, so that instead of the PbSO₄ and PbS reacting, the PbSO₄ would react with the metallic lead, yielding litharge and PbS and diminishing the yield of lead.

I will now examine the process in the light of my researches. It must be remembered that as galena of all degrees of fineness is present, we can only follow the main course of the reaction, as the fine dust of sulphide pursues a different course from the coarse ore, but I assume we are dealing with a coarse ore, and that the main reaction is the only one.

In stage 1 of Percy's description the action is entirely one of burning out the sulphur till a sub-sulphurised lead containing from 3 to 5 per cent. of sulphur is obtained or a mixture of 4Pb with one of PbS. In stage 2 the material is placed in a good position for melting down. In stage 3 the sub-sulphide is cooled to cause its separation into metallic lead and sulphide. In stage 4 the material is heated to allow the metallic lead to trickle out, and at the same time oxygen is rapidly absorbed, and the compound PbS.PbO formed which flows down a slag. Of course some sulphate is formed at the same time, and the PbS.PbO goes on eagerly absorbing oxygen and forming sulphate. The slag still contains a good deal of galena in fine particles, and requires to be again fractionated, but that could not be done if it were allowed to lie fused on the surface of the lead, nor could the lead itself be purified from the sulphide which it still contains except by being exposed to the air. Another reason for the speedy removal of the slag from contact with the metallic lead is that it has a deleterious effect on the lead if left in contact with it.

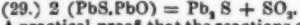
When the slag still contains excess of sulphide, that sulphide is gradually transferred to the lead, making it hard; and when, on the other hand, it is low in sulphide, then the sulphate present is attacked at the expense of the lead by the reaction PbSO₄ + 4Pb = PbS + 4PbO, so that it is imperative to at once separate the slag from the metal, which is done in stage 5.

But it is not ready to be treated in the blast furnace or slag hearth, as it contains much sulphide, so the only thing to be done is to "dry" it up by admixture of some neutral solid, so as to enable the men to push it up round the sides of the furnace and expose it to the air, and at the same time leave the lead free. In stage 5 of Percy's description slaked lime is added (in some countries, as Spain, a mixture of charcoal and lime is added), and the slag thickened (by its "drying" power) sufficiently to enable the smelter to "set it up" round the sides. It is again left to cool to induce the crystallisation and separation of the low sulphide into lead and the mono-sulphide. On quickly re-melting lead is again seen to trickle out, and the slag runs down again. Now a point of supreme importance is that at the critical point of this process—i.e., when the temperature is suddenly raised and lead flows freely, there is no special evolution of sulphur dioxide. This clearly proves that the main source of the metallic lead is simply fractionation of the partly desulphurised sulphide, and not a double decomposition.

Of course the experiment did not include oxidation, but was executed in small steps for the special purpose of illustrating the gradual fractionation of a low sulphide into lead and its mono-sulphide.

Percy mentions at some periods of the smelting a sound is heard—"sizzling." I think he calls it—showing an evolution of gas. I have often heard this, and have imitated it in large flat basins in a muffle furnace, and I have often found it to be connected with the action of sulphide of lead on the sulphate of lead dissolved in litharge, resulting in the formation of more litharge as shown in equation 21.

It is also caused by the decomposition of the PbS.PbO compound when suddenly subjected to heat, as SO₂ is evolved, and a sub-sulphurised lead produced thus:—



A practical proof that the reactions of the oxidised lead compounds upon the PbS are not the cause of the production of the metal, lies in the fact that iron rables are used constantly stirring up the materials, and iron is attacked by PbS at as low a temperature as that at which it reacts with the sulphate of lead, so that if the temperature were raised to bring about a reaction of the PbS with the PbSO₄, the iron rables would be quickly destroyed. I have shown that when the temperature is raised the SO₂ evolved begins to carry off much PbS by forming the volatile compound PbS₂O₃; so the great aim of the smelter is to obtain a burning out of the sulphur at as low a temperature as possible, and it is wonderful how quickly the sulphur may be burnt out at a heat below visible red; in fact, sulphur seems to be much more loosely combined with lead at low than at high temperatures, as is shown by two experiments. I have often noticed that when pure sulphide of lead, such as that obtained by sublimation, is quickly heated in a glass tube, in an atmosphere of nitrogen, a minute quantity of sulphur is evolved and condenses in the tube. Then we have seen that at a temperature of 350 degrees C., liquid SO₂ acts upon PbS, forming PbO and setting free sulphur, whereas at a white heat, when its oxidising power might be expected to be greatly increased, it does not oxidise the PbS at all, but forms a compound from which pure PbS is deposited at a lower temperature.

The last point to be noticed is that at the moment of heating the roasted ore to melt down the lead there is a great absorption of oxygen to form the compound PbS.PbO, and that the formation of this compound—the basis of black slag—causes the rapid expansion of a nearly pure lead. I have often repeated that experiment in a model furnace, but at the moment of melting down I have replaced the air by nitrogen, when the separation of lead was not at all so sharp, and it required a second cooling and remelting to get anything like the same result.

To sum up, then, the method of smelting lead in the reverberatory furnace is not (as hitherto explained) a result of the equation PbS + PbSO₄ = 2Pb + 2SO₂, which I have shown to have no existence, but it is simply a burning out of the sulphur by air, producing a sub-sulphurised lead, which, on being allowed to solidify, separates into Pb and PbS, and on remelting this, the lead melts out first, leaving the more infusible PbS, while oxygen is absorbed and PbS.PbO formed, which, along with all the impurities in the ore, silica dissolved from the brick of the furnace, and some sulphate of lead goes to form the slag.*

I have followed the process as generally carried out, but different workmen have different rules as to firing, heating and cooling, &c., with the result that the same ore may yield from 60 to 67 per cent. of lead, according to manipulation; but, of course, the slag of the smelter, who has made the smaller quantity of lead, will yield a proportionally greater amount of lead on reduction on the slag hearth besides being more easily reduced.

We will now consider the slag. Percy was much puzzled to find any reason for adding lime to the slag when "setting it up" from the lead in the lead well, as the lime does not appear to react with the slag.

It is said that in Spain they use a mixture of lime and coke breeze, and the coke breeze reduces a little of the PbO to metal; but lime is always used.

The reason for adding the lime is two-fold. It acts in the first place as a stiffener or "drier," which enables the workmen to "set up" the slag and separate it from the metal. But its real use is in the subsequent smelting of the slag. Percy has shown that the slag gradually accumulates combined silica, and that this may rise to 12 per cent. of the slag. It sometimes rises much higher with "alimes," or ores containing much silica, or if the workman allows his slag to lie too long liquid before "setting it up," as it then attacks the furnace bottom. Now, silica of lead is not reducible to any extent by carbon, but on adding lime, the stronger base lime takes the silica and throws out the lead oxide, which is at once reduced by the carbon of the slag hearth. I need not treat of the reactions of the slag hearth at any length,

* It is the practice of some smelters not to lower the temperature before melting down, and hence they do not get the benefit of the isolation of the lead by crystallisation. In such treatment the burning out of the sulphur goes on till the sub-sulphide of lead gets supercharged with lead, and when the temperature is raised oxygen is absorbed and the PbS.PbO compound formed, and the lead set free. This treatment, in skilful hands, yields nearly as good results as the crystallisation method, but the end is not reached so sharply or strikingly as by the other more generally accepted method.

as they are very simple. The slag consists of oxide sulphate and silicate of lead, as the last two hours' work in the reverberatory furnace is practically a process to get rid of the last traces of sulphide to render the slag fit for the slag hearth. The oxide is reduced at once, the silicate split up by the lime, and the sulphate is reduced as shown at equation 24, generally according to the second of these equations, as the lead obtained is a little "hard" from the presence of some sulphur.

Lead fume from the flues, consisting mainly of sulphate of lead, is smelted in the same way with carbon in a hearth or cupola; but being a very fine powder, not only is fume produced by the PbS₂O₃ reaction, but a quantity is mechanically carried away by the blast. I have described these reactions as succinctly as possible, and the whole operation in the reverberatory furnace may be summed up in the reaction.

(30.) $24\text{PbS} + 44\text{O} = 17\text{Pb} + 2(\text{PbS.PbO}) + \text{PbSO}_4 + 2\text{PbS}_2\text{O}_3 + 17\text{SO}_2$ which would represent the best results obtained viz., 68 per cent. of lead, 12 per cent. slag, and 6 per cent. fume, but the slag often amounts to 14 or 16 per cent., and the fume to as high as 12 per cent., according to the nature of the ore. But it must not be thought that there is a complete cut and dry chemical reaction like that represented at 30, because, according to the fineness of the ore, the air may be desulphurising it or converting it into sulphate, but only the very finest particles go directly to form sulphate, and with clean coarse ore the above reaction practically represents what takes place.

The new compound PbS₂O₃ is very easily oxidised (if mixed with excess of air or oxygen) to sulphate of lead and sulphur dioxide, and as the oxidation when conducted by air takes place in a large volume of a neutral gas—nitrogen—the particles of PbSO₄ are almost molecularly fine if cooled before they have time to coalesce. It will be seen that the practical method of smelting lead, although simply founded on traditions handed down from father to son, really represents the most perfect method of treating galena by air in a reverberatory furnace, and has been found after a most searching investigation, extending over seven years, to give the largest yield of lead possible with this mode of treatment. The accumulated observations of practical men extending over generations has evolved a process which takes advantage of reactions, the complexity of which had hitherto baffled the investigations of chemists. Yet so completely is the advantage taken of the course of oxidation of sulphur that now that we know what is going on, and applying that knowledge in dealing with the lead in the furnace, I have found it impossible to materially increase the yield of lead. The formation of the two oxy-sulphides which constitute fume and slag are inevitable with such a process, but these researches have shown that there are other means of treatment, rendered possible of execution by the invention of the basic Bessemer process for iron, by which the oxy-sulphide slag may be entirely avoided, while the other volatile oxy-sulphide may be made a useful step in the process instead of being considered a troublesome accident.

6. New Metallurgy of Lead.

The new metallurgical treatment of galena may be roughly stated as follows:—The galena is placed in a basic lined converter in the molten state, and air blown on its surface as well as a little forced through it to obtain as much volatilisation as possible. One half of the lead is volatilised and converted by excess of air into sulphate of lead. Should the lead be sufficiently rich in silver to render it advisable to obtain a concentrated silver lead, the greater part of the sulphate is returned to the metallic lead in the converter, and air forced through the lead to maintain a high temperature, and induce the reaction by which litharge is produced. By using rather less than the quantity of sulphate required, and forcing excess of air, the sulphide which forms as shown in the secondary reaction is entirely oxidised, and a good litharge obtained. The small quantity of lead in excess of the reaction will now be found to contain all the silver. Should the lead be poor in silver, it may simply be run off and a new charge prepared.

Should it be required to convert all the galena into the metal, the sulphate may be added to a fresh charge of galena when the reaction (1) takes place. The reaction there given represents the first stages of such a decomposition, and the volatilisation is extreme, but the metallic lead produced dissolves in the sulphide and lowers the melting point, and if the temperature be allowed to fall the reaction approaches more nearly a burning out of the sulphur by the oxygen of the sulphate, so by this process the final result of the action of an insufficient quantity of sulphate is to produce a low sulphide, which may be then finished off by air, and so metallic lead produced.

This process is capable of many modifications, but by its means the galena may be turned into the metal, or its oxide or sulphate in any proportions, all that is required being a basic lined converter and a series of wet condensers in which to collect the various sublimates, whether of white sulphate or of black sulphide.

The sulphur dioxide is obtained in a concentrated state, and quite free from any association of lead, so that it can be utilised at the same time in other manufactures. As these reactions are capable of being quickly carried out, and in large quantities at a time, they form the basis of a new metallurgy of lead, which will hold the same relation to the old method as Bessemer's process does to the old hand-puddling of iron.

It may be wondered how the old test-book reactions came to be accepted, although they are quite erroneous.

Most of the experimenters wrought with coke furnaces and fire-clay crucibles, and they found, as Percy did, that sulphide of lead passed freely through the pores of the crucible, so that a considerable loss had to be expected. Plumbago crucibles at once reduce litharge to metallic lead. Now, in conducting an experiment, it seems to have been the habit to place the acting substances in a crucible, and heat it in a coke furnace till the reaction was complete. The litharge was largely absorbed by the crucible, and sulphide of lead passed through the pores, while all sulphate was decomposed and converted into silicate. Hence the only substance left unchanged in the crucible was metallic lead, and it will be seen by comparing my formulae with those of the text-books that the latter err in stating that the reaction yields metallic lead, when it really yields a mixture of this with litharge or sulphate. As the experimenter was prepared for a large loss, no notice was taken of the small yield. By using a gas blow-pipe furnace, and working in thin salamander or Berlin porcelain vessels, I have been enabled to heat the materials quickly to the required temperature and watch the re-action, and instantly raise or lower the temperature. Again the studies have sometimes been made at temperatures which are incompatible with lead smelting. For instance, PbO is the only substance except lead which is

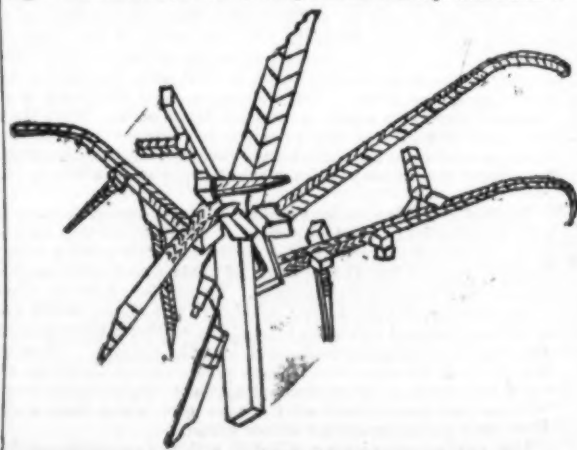


FIG. 3.

liquid at the temperature of the smelting furnace; on adding PbS to it the substance PbS.PbO is formed, but on mixing them in the

proportion $PbS + 2PbO = 3Pb + SO_2$, and placing them in a Hessian crucible and heating for an hour in a coke furnace, there is found to be only metallic lead remaining. But no such reaction takes place in the reverberatory furnace, as the temperature is not sufficiently high. But, as Percy says, only rough approximations were expected,* as the existence of the volatile $PbSO_4$ was unsuspected.

I append a few drawings of some of the curious and beautiful combinations of crystals of lead sulphide, which have been observed during these researches. When these are seen gleaming with metallic lustre against a background of perfect cubes the effect is extremely beautiful. But my reason for drawing them is that it will be seen that cubes join end to end, and form perfect needles, which one would think belonged to the dimetric system were it not that the needles generally terminate in a cube. Some curious bent crystals are shown in Fig. 3, and the form of a cross is often seen, one starting from the corner of a large imperfect tube having rather an ecclesiastical form.



FIG. 4.

Fig. 4 is drawn to show the separation of a low sulphurised lead into the metal and its sulphide, and is drawn from a cavity of a cooled mass, the lead having contracted away and left the crystals partly exposed.

DISCUSSION.

Mr. T. RICKARD hardly knew with what feelings their friends the chemists would see their St. Augustine, Dr. Percy, thrown aside, and wondered whether they would be reconciled to such a wholesale demolition of everything they had hitherto cherished. Mr. Hannay, who had lectured so admirably, had chosen for his illustrations a pure galena, while in practice they rarely met with pure galenas, but galena mixed with antimony, and frequently with zinc, and this must very much upset the correctness of the formulae written on the blackboard. He should like to know how the operations would be affected by having 2 per cent. of antimony, zinc, and pyrites. Then, again, it was difficult to understand the relative advantages of the old and new processes unless they were told something of the economics of both. The paper commenced by supposing the product was first molten, and then run into the converter. Sulphide of lead was among the most refractory of substances, and it could not be got into a molten state unless it were first calcined. And if the preparatory roasting and smelting were needed there certainly was no advance in the direction of simplification. The position seemed to be this. In the case of rich galenas—galenas of from 70 per cent. to 80 per cent.—they had by present methods the reverberatory smelting which gave them from 80 per cent. to 90 per cent. of the lead contained. That was considered good work. After that there was nothing to do but apply the zincage and capellation to get out the silver. So that practically there were two processes. Now, with the new metallurgical process there seemed to be a surplussage to come; therefore he failed to see where the advantage came in. The position which the author had taken up with regard to smelting hitherto was rather a remarkable one. It had become the fashion to speak of the empirical work in a depreciating kind of way. As a matter of fact, however, Englishmen were nearly entirely empirical, and did everything by empirics. A chemist or engineer came afterwards, examined what had been done, and tried to get at the philosophy of it; but he seldom gave any real assistance at first. He should say that not 10 per cent. of those engaged in the British industry had anything more than a working knowledge of what they were about.

Mr. J. H. COLLINS felt somewhat bewildered, because Mr. Hannay had given them an abstract of the paper, which was really not an abstract, had put in a good deal that was not in the paper, and left out much that was. It was not his intention to discuss the paper; he rose merely to put a sort of question to the author. He had told them, and they knew before, how difficult it was to condense lead fume. Now, in this new process, where the fume was made in as large a quantity as possible, and the operation, repeated over and over again, would not the loss, instead of being 7 per cent. or 9 per cent., be something fabulous? However valuable the condensed fume might be in the market, would not the absolute loss be so great that the process must be a bad one? It might be that the author knew of an improved condenser, but had not space to speak of it in his paper. So far, however, as he knew of the condensation of lead fume, the loss must be something fabulous. One other remark he would make, and that was in regard to the passage in which the author spoke of the effects of the rule of thumb method of smelting, and which should certainly make them all very humble. Not only did the author seek to show that Dr. Percy and all his researches were wrong, but he also said that now he had found out the truth he was not able to show where the process handed down from father to son could be improved. After that the criticisms of rule of thumb men ought to be offered in a modest spirit.

The PRESIDENT said that the author on the first page of his printed paper stated that Dr. Percy spoke of "supposed sub-sulphides of lead." It was perfectly true that he had headed a paragraph in that way, but no one could read Dr. Percy without seeing that he did not believe in sub-sulphides of lead, and, in fact, took pains to prove that they did not exist. For his own part, he had the greatest possible respect for Dr. Percy and his work, and those who had a knowledge of him, and, in fact, the whole world besides, admitted him to be, as far as care and accuracy went, the greatest experimenter they had ever had. He spared no time, no expense, no trouble to get at the truth, and he never attached his name to anything as a fact which he had not proved down to the ground, but invariably gave it with all the necessary reservation. He always gave the data upon which he founded his conclusions, and described how the experiments were performed; so that he should be very loath to reject any of Dr. Percy's statements without the fullest proof. The whole question of the reactions in lead smelting was an extremely complicated one, small variations in the temperature altering altogether the course of the reactions. Mr. Hannay had himself referred to the fact, but he hardly thought he had taken sufficiently into account that it went even further than he had carried it. Mr. Hannay had admitted that the work he had done had not advanced the practical side of the question one iota. Whatever might be the case with regard to the reactions, the practice remained the same, excepting in so far as he proposed what he called a new metallurgy of lead. Now, the reactions which he proposed were quite possible upon a certain scale, but there remained the question of condensation. The question of the condensation of lead fume had always been looked upon as one of the most difficult problems in metallurgy, and one which he believed himself safe in saying had not been satisfactorily solved on a practical scale. The author told them that he proposed to condense on such an enormous scale the fumes which he intended to produce intentionally, and which, produced unintentionally, gave such enormous trouble. The furnaces in which he proposed that the operations should be carried on were, he said, to be lined with basic material, but he (the President) would be very much surprised if he could by his purpose any basic material which would not be corroded by the oxide of lead. It should be recollected that there were also the ordinary sulphide of lead of the smelter, which contained slag and other things which would materially assist in the corrosion of the lining. Then he did not think that at the present time one ought to laud the Rule of Thumb, which was really the outcome of careful observation and of the nature of science. Rule of Thumb was the result of the careful observations of competent men, not of the observations of Tom, Dick, and Harry. Rule of Thumb was the

* Much skill is required to yield even approximate results," PERCY.—
"Lead."

sum of the observations of many men who might be in humble positions, but who were gifted with brains, and the faculty of accurate observation. Neither the Bessemer steel process nor the Siemens process was the result of Rule of Thumb, but of investigations in the metallurgical laboratory.

Mr. HANNAY, in reply, apologised for the irregular manner in which the paper had been submitted. He had thought it the preferable way, and was sorry if it had at all confused his audience. The question of the condensation of lead fumes had for years occupied the attention of metallurgists, and condensers had been invented which would condense 96 per cent. of the fume. He (Mr. Hannay) made a further improvement on that, and out of 20 tons of fume burnt in 24 hours, they lost 24 lbs. up the chimney in 24 hours. With regard to the Rule of Thumb, he agreed with the President that it was simply the result of the observations of men who had their heads screwed on in the right way. Some of the best economical processes were completely and totally the result of the laboratory. The question of impurities, raised by Mr. Rickard, had been dealt with in Germany. The lead which contained antimony was simply melted and put in a converter. Air was then blown through the metallic lead, and the antimony was taken off and pig lead of a purity of 99.995 per cent.—in fact, absolutely pure pig lead—remained. With regard to what the President had said as to Dr. Percy mentioning "supposed sub-sulphides of lead," he himself had mentioned this to show that Dr. Percy did not believe in them.

A hearty vote of thanks, proposed by Mr. VAUTIN, and seconded by Mr. RICKARD, was given to the lecturer, and the proceedings terminated.

MINING IN CORNWALL

AND DEVON:
NOTES ON WESTERN MINING, EDITORIAL
AND OTHERWISE.

THE past week has not been so interesting as those which immediately preceded it, and the share market has settled down to what for the last 12 months has been its normal state. There have been no orders of consequence, and if there had been any given they would have been executed with difficulty, owing to the indisposition of holders to part with shares at present prices. The majority of people are playing a waiting game, which, if they can hold on long enough, is pretty sure to pay them ultimately. It has, however, been a protracted and weary struggle, and has told heavily on a large proportion of those who have been engaged in it.

DOLCOATH, albeit so phenomenally rich a mine, seems to have had more than its share of misfortunes during the past 12 months. Almost before shareholders had an opportunity of reading Captain Josiah Thomas's glowing statement of the position of the mine, an accident had occurred, the effects of which it is at present impossible to accurately gauge. At the end of last week a "run" occurred at the 125 fathom level which completely blocked the engine-shaft for a long distance. The part of the mine where this occurred has not been worked for very many years, a rich bunch of copper having been taken from here in the old copper days. The accident would not have been of much consequence but for the block which it has caused in this shaft, which is the pioneer shaft of the mine, and is now several fathoms below the deepest level. It is not used largely for drawing, but the pumping-engine has been stopped, and as a consequence sinking has been impossible. Unless the engine can be got to work speedily the bottom level, where the wonderful lode which we referred to last week is opening up, will be inaccessible. Some uncertainty prevails as to how long the engine is likely to remain idle. It mainly depends on this whether the influx of water be sufficient to seriously hinder operations, but even supposing work here is suspended for an appreciable time, the resources of Dolcoath are probably equal to the emergency, so that shareholders have no occasion to feel particularly anxious as to the result of the next meeting.

ANOTHER batch of meetings have been held within the last few days, and a call has been made at each. Wheal Kitty continues as poor as ever, though, judging from the report of the agents, they seem to be on the track of what we hope will prove to be two good bunches of tin. During the bad times they have been obliged to suspend the driving of the level on the south lode. This will be taken up again when opportunity offers, and those who know the St. Agnes district express a strong opinion that the lode will be found in this direction. The prospects in the 172 seem to be better, and the level is being pushed on with remarkable speed. The pair of men were offered a premium, and succeeded in driving 10 fathoms in three weeks through hard ground. Captain Teague claims this to be the highest rate of speed ever attained in the county. Encouraged by the success of their near neighbours at West Kitty, the Wheal Kitty adventurers continue to struggle on pluckily against adverse circumstances. They have certainly deserved the success which it is to be hoped will crown their efforts at no distant date.

THINGS seem to be looking better at South Condurrow, where on Tuesday a loss was shown of £1500, and a call of 5s. per share made. Operations are now centred in the development of the western part of the sett, the eastern part having yielded the big profits which the shareholders were until recently putting into their pockets. Up to the present time the western part has not been of much value, but in the 153, which is the bottom level, they have struck the best lode that has been seen in that part of the mine. Captain Rich, the manager, strongly advised the sinking of the shaft, and this, together with the driving of the 153, will be proceeded with as fast as the limiting of the loss to £250 per month will allow them.

WHEAL BASSET shareholders made a call of 3s., as the committee recommended. The agents appear to be in the unfortunate position of not being able to get at the tin which they have already discovered, on account of the tremendous amount of water. One winze in which they had a good lode became flooded, and they were obliged to leave it. They then took up another winze some distance away in the hope of being able to work the bunch of tin from there, but a breakage occurred at the engine a week or so ago, and the consequence was that the water got in there as well. The water difficulty is a very serious one at Wheal Basset, and the committee will have to take the matter up, and endeavour to meet it before another winter.

THE CONGRESS OF FRENCH MINERS at Graissessac adopted a resolution calling upon all miners to cease work on May 1, each mining syndicate to organise the demonstration to be held on that day in accordance with local customs and its financial resources. It was decided to hold the next Congress at Nantes. The delegates then discussed at length the subject of a universal strike, and eventually adopted by 94 to 18 votes the following order of the day, as presented by M. Basly: "The Congress reckons on the exertions of the Federal Committee to endeavour to unite all French miners under the banner of the National Federation, with the view of organising a general strike, the only means of realising the fulfilment of the demands of the working classes."—The President thereupon declared the Congress closed, and the delegates separated amid cries of "Long live the Social Revolution," "Long live the Workmen's Union."

MEETINGS OF MINING COMPANIES.

MYSORE-WYNAAD CONSOLIDATED GOLD MINING COMPANY, LIMITED.

Reconstruction decided upon.—The reorganisation scheme explained and adopted.

AN extraordinary general meeting of the members of the Mysore-Wynad Consolidated Gold Mining Company (Limited) was held on Monday, at Winchester House, under the chairmanship of Colonel MALLESON, for the purpose of considering, and, if deemed expedient, passing resolutions reconstructing the company. The SECRETARY (Mr. L. J. Woodman) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, under ordinary circumstances it would be my duty to explain to you the various provisions of the agreement which will be submitted to you. That agreement has been drawn up under the auspices of the largest shareholder and the largest debenture-holder of the company, who is present, and who will second the resolutions, and at his own request I leave to him the task of explaining anything that may require explanation in the new agreement, and upon him will devolve, also at his request, the duty of answering any doubtful points which may occur to you. The Chairman concluded by moving the following resolutions:—

(1) That it is desirable to reconstruct the Mysore-Wynad Consolidated Gold Mining Company (Limited), and, accordingly, that the same be wound up voluntarily, and that Mr. Robert Walker and Mr. L. J. Woodman be, and they are hereby, appointed liquidators for the purpose of such winding up. (2) That the said liquidators be, and they are hereby, authorised to consent to the registration of a new company, to be named the Mysore-Wynad Consolidated Gold Mining Company (Limited), with a Memorandum and Articles of Association in the terms of the draft submitted to this meeting. (3) That the draft agreement embodying the reconstruction scheme submitted to this meeting, and expressed to be made between the company and its liquidators of the one part and the new company of the other part be, and is hereby, approved, and that the liquidators be, and they are hereby, authorised, in pursuance of Section 151 of the Companies' Act, 1862, to enter into an agreement with such new company when incorporated, in the terms of the said draft, and to carry the same into effect with such, if any, modifications in the terms thereof as they may think expedient.

Mr. GEORGE HERRING said: I beg to second the resolutions, and, at the same time, I wish to give a little explanation as to the reason that I am here. I have been very fond of Indian gold mines, and I dare say it will surprise many of you to know that they have not only amused me, but they have enriched me. (Laughter.) I thought there would be some slight expression of surprise. As regards reconstructions, I seem almost to look upon them as being simply steps in the ladder; almost a necessity. I have been through the Mysore, the Oregum, and the Nundydroog, and so I am in hopes that this will have, like those, an assured success after the reorganisation has taken place. I do not wish to detain you, but I think I might just as well give you a short explanation of why I placed my money in this mine. I had a sort of idea that Nature, as a general rule, never spites any particular class of individuals, and I could not see any reason why she should endeavour to spite this company. We know that the vein ran from south to north—that is, from the Mysore, the Oregum, and the Nundydroog. We knew, also, that it ran to the Balaghat, and it seemed to me as certain as it was possible to imagine that the gold was there. I need not say that I am speaking of some time ago, because we are now convinced of it. There was the Kennedy's shaft in the Nundydroog south of the mine; they were within 250 feet of us, and they have found gold. The Coromandel, with varied success, and the Balaghat have found it; so you have a vein of gold running through the different mines, and you must suppose, if Nature is going to be very unkind to us, that she stops short of our mine, picks it up again at the other side, and then goes on. My common sense seems to tell me that such is not the case, and that the gold is there, and in good payable quantities. On this reasoning I bought about 20,000 shares at what I then thought was a low price; but I am sorry to say it is not the price at present. In due course of time money was required—it always is the case in Indian gold mines; debentures were issued, and I was bound to take a great many debentures to protect my shares, and to protect both debentures and shares I became trustee. That is my explanation why I am here. I saw in one of the financial papers a letter which I can only stigmatise as one of the silliest letters I have ever read. It advised the shareholders to forfeit their shares and let the debenture holders foreclose on the mine. I can tell you one thing, as trustee and debenture holder, that could be done very easily, because I am sure that within 24 hours I could obtain a powerful syndicate which would be only too glad to take your mine, to pay out the debenture holders, and find money for working capital; but if such a thing were done, I should unhesitatingly say that you were being robbed of your mine, for which you have paid a great deal of money, and having found the gold it would be a pity to lose it just at this time. I may also mention another thing. If the writer of this letter believed in his advice, all I can say is that the scheme still leaves him in that position, because he can forfeit his shares, and any gentleman who likes can follow his example; but I need not tell you that there would be plenty found to take the shares off your hands. Coming now to the scheme, of course, I do not for one moment say that it is faultless, but I do say it has been prepared with great consideration; and although I am quite sure that those gentlemen who are outside the inner working of the scheme can at once point out the faults, yet I should say to them that if they had known all the difficulties against which we had to contend I feel quite sure that they would arrive at one conclusion, the same as we do—that it is the best and the only scheme. I want to give you two instances where difficulties crop up. Nothing appears easier than to amalgamate the two mines and take the Tank Block, &c. But a difficulty would crop up instantly with the directors of the Mysore West, who would claim that they have a water right that is valuable, that they have a great number of our shares, and that their assets, in fact, are very much more valuable than ours. Then, again, from their point of view, they might argue that our Wynad land is not valuable, or of no value at all, and we might naturally argue that it is possible that we may find gold in the Wynad. Therefore, I hardly think it possible to get these two conflicting interests together without arbitration, and that arbitration would hardly be satisfactory. But this scheme is prepared to give you all the advantages of amalgamation. I take it that to amalgamate the two mines the principal reason would be economy. Well, here we have that economy. There will be three directors, and the same directors will be for both companies. It is proposed that they shall receive from each company £200 a year—that is, a total of £400 per annum. Therefore, you have the same economy as if the amalgamation had taken place, and yet you have the assets preserved as they are now. I have no doubt that there will be the same efficiency in the board, and that you will thus save quite £1000 a year by that. I may mention that beyond this the board will receive a remuneration at the rate of 2½ per cent. on the dividends paid to you, and I do not think any of you will begrudge that. Let us hope that that will very largely increase their remuneration. I will now turn to the scheme. Perhaps you might ask the question: Do you consider the capital about to be raised by this scheme sufficient? Well, speaking for myself, I should not like to say positively "Yes;" but I do say that it will be quite sufficient to place your mine on a good basis, so that you will have no difficulty in obtaining any more money that may be required. I do not think any one present can hope that £30,000 will develop the mine into what we hope it may become—an Oregum or a Mysore; but this sum of money should enable you to place those shares that will be in the treasury in such a position that, instead of, as they are now called, 1s. 6d., they shall be saleable at certainly par or over. There is one other point that may be raised. Some gentleman may say, "Oh, I

think I shall forfeit my shares. It is true you have found gold; but the question is whether you have found it in sufficient quantities to make the mine payable. Well, gentlemen, I think that is rather illogical, because I should say you ought to have thought of that before you searched for the gold; for that is always one of the doubts that exist. What I should submit to that gentleman is this: You have lost all your money up to the present time, and what you are asked to do now is to put 2s. 6d. more into the company, to see whether you can make that past loss profitable. I think the directors have placed before you the position of the mine, and, therefore, I will deal with the scheme of reconstruction as it stands. In the first place, a new company is to be registered, with a share capital of £150,000 in 150,000 shares of £1 each. That is where the first difficulty crept in. The Mysore West had a capital of £130,000 and the Mysore-Wynnad a capital of £250,000, and, as they were partners, it was necessary to make them equal; so that the capital in each case is made into £150,000, holding the unissued shares in the treasury, which cannot be issued except at 20s. Every shareholder of the old company is to be entitled to receive one share in the new company credited with 17s. 6d. as paid up, for every two shares held by him in the old company. The new company is to create a debenture issue of £10,000, which takes the place of the old debenture issue. I feel perfectly sure that there will be a great deal of discussion on the scheme, and if there is any point which is not understood I shall be very glad indeed to answer it; for to a certain extent I am, as our Chairman stated, the promoter of this scheme. Although I do not doubt for a moment that flaws may be found in it, I do say, emphatically, that it is an honest attempt to put the mine on its legs again, and that it has no bias for or against the debenture-holders, the present shareholders, or the Mysore West.

The CHAIRMAN: With reference to the letter which appeared in one of the financial papers, I would ask your attention to the fact that Mr. Herring has behaved with the greatest generosity towards the shareholders of this company, because, as he said just now, it would be very easy for him, being, as he is, the principal debenture holder of this company, to foreclose and wreck this mine—I venture to say this valuable mine—at the very smallest price at which it would be valued in the market, and then to raise a syndicate to work it. But, instead of that, he has arranged so that the mine shall be worked in the future on the most economical basis. Before I put the motion which I have proposed, and which Mr. Herring has seconded, I would ask any gentleman who has any questions to kindly put them to me now.

A SHAREHOLDER enquired what the present position of the company's finances was.

The CHAIRMAN replied that there were practically no debts beyond the debentures.

Mr. TAYLOR, having explained the difference between the Articles of Association of the old company and the new company, and the terms of the agreement, the three resolutions were carried, each with one dissentient.

The CHAIRMAN congratulated the shareholders upon having come to this decision, saying he was certain it would be to the advantage of them all.

The proceedings terminated with a hearty vote of thanks to the Chairman, proposed by Mr. OGLE.

THE MYSORE WEST GOLD COMPANY, LIMITED.

Reconstruction unanimously agreed upon.—Promising outlook at the mine.

An extraordinary general meeting of the Mysore West Gold Company was held on Monday, at Winchester House, Mr. ROBERT WALKER presiding, for the purpose of considering resolutions providing for the reconstruction of the company.

The SECRETARY (Mr. L. J. Woodman) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, there is a gentleman here who is our largest shareholder and our largest debenture-holder, Mr. George Herring. He has taken a very great interest in this company, and as a debenture-holder he has arranged for such favorable terms that we owe him not only thanks but gratitude. He has agreed to say a few words to you in regard to this matter, and he has done so to such effect at the meeting of the Mysore-Wynnad Company that the resolutions adopting the scheme have been agreed to with only one dissentient, the meeting being a very large one. I think it will be better to hear all explanations from Mr. Herring, who is such a large shareholder, than for me to give them, although I am among the largest shareholders, and hold at present a greater interest in the undertaking than ever before. I only mention this to show my confidence in the working of the Tank Block, which, from the first time I saw it, I have had perfect confidence in. I believed it would turn out a success sooner or later, but it is later than I expected, because I certainly thought that ere this it would have been self-supporting, which is the second stage of all Indian mines. There are three stages in mines—the first is the speculative stage, the second the self-supporting stage, and the third the dividend stage. Indian mines, unfortunately, are longer than most others in coming to the second stage. The pace is very slow till they come to the dividend stage, but when they reach that stage they are good stagers, and hold their ground; in fact, I am not aware at this moment of a single mine in the Colar Field that, having once begun to pay dividends, has discontinued them. You might suppose that, as I took such an interest in the acquisition of this property, I would be very confident and say more about it, and be more sanguine than I ought to be, looking to the fact that everything in mining is so uncertain. Well, Mr. Herring came into this company at a later stage, and you will hear from him, without, I believe, the least sanguine anticipations, what are his ideas, formed from watching the progress of this mine, he having joined when he was convinced that it would turn out a success to everyone connected with it. I beg to propose the resolutions, which are as follows:—

(1) That it is desirable to reconstruct the Mysore West Gold Company (Limited), and accordingly that the same be wound up voluntarily, and that Mr. Robert Walker and Mr. L. J. Woodman, be and they are hereby appointed liquidators for the purposes of such winding up. (2) That the said liquidators be, and they are hereby, authorized to consent to the registration of a new company, to be named the Mysore West Gold Company (Limited), with a Memorandum and Articles of Association in the terms of the draft submitted to this meeting. (3) That the draft agreement embodying the reconstruction scheme submitted to this meeting, and expressed to be made between this company and the liquidators of the one part, and the new company of the other part, be and is hereby approved, and that the liquidators be and are hereby authorized, in pursuance of Section 181 of the Companies' Act, 1862, to enter into an agreement with such new company when incorporated, in the terms of the said draft, and to carry the same into effect, with such if any modifications in the terms thereof as they may think expedient.

Mr. GEORGE HERRING said: Gentlemen, it is only an hour ago that I was addressing the Mysore-Wynnad shareholders, and as on the present occasion I can only go over the same ground as I traversed then, I shall be as brief as possible. Mr. Walker has mentioned to you the reason I gave at the Mysore-Wynnad meeting why I came into these mines. Shortly, I said that I was very fond of Indian gold mines, as I had been both amused and enriched by them. There was a little laughter at this point, because I think that the feeling of the majority present was that they had not been enriched by them. (Hear, hear.) I also stated that my reason for buying shares in the Wynnad as well as the West was that I believed that Nature does not do anything wrong, and that, as a general rule, she has no spite against any particular company. I felt that if the gold vein ran up to the south of our mine and picked up again to the north, it proved that it did not diverge, and it, therefore, seemed almost unnatural to suppose that she had left our little property for us poor Tank Block shareholders to find there was no gold in it. On that belief I bought a great many Mysore-Wynnads and a goodly number of Wests. Then followed the usual course—more money was required—and it was necessary for me to protect my shares by taking a good many debentures. Then I found that it was well for me, so as to look after the large amount of money I had in this Tank Block, to become trustee, and that is why I am here at present. As regards

the scheme, I may say I have taken a very active part in its preparation, and of course there have been a great many difficulties in the way. As a general rule, it seems that it would be very easy to take the two companies and amalgamate them, reducing your shares, and so on. But, as I pointed out to the other meeting, the Mysore West shareholders, and the Chairman of that company, maintain very strongly that the assets of the Mysore West are very superior to those of the Mysore-Wynnad. He has enforced the fact at previous meetings that you have valuable water rights, that you have also a large block of Mysore-Wynnad shares, and that, generally speaking, your assets are far superior to those of the Mysore-Wynnad—in fact, I heard Mr. Walker say at one meeting that he considered they were worth almost three to one—that is to say, that one Mysore West was nearly equal to three Mysore-Wynnads. Well, with that difference of opinion—because the Mysore West shareholders would not admit that—it was nearly impossible to amalgamate. But amalgamation would only mean economy, and that has been effected under this scheme. The principal economy that I would point out is in reference to the board. You will now have three directors for the Mysore-Wynnad and the same three directors for the Mysore West, and each company will pay £200 a year to the directors, making a total of £400 a year for the board. Each board of directors will, of course, represent their own company and guard their assets, but, as regards the Tank Block, that is to be a partnership, and quite equal. Under this scheme you will certainly economise to the extent of at least £1000 a year, and you will have precisely the same efficiency in the management as though you had two different boards. The amalgamation is thus almost identical with what would have taken place had you made the concerns into one company with one board—that is to say, it obtains the desired economy. The writer of a letter which has appeared in one of the financial papers advised the shareholders to forfeit their holdings and let the debenture-holders take possession of the mine. I am sure you will agree that I am not overstating the case when I say that such a course would be to the advantage of the debenture-holders, because they would get their money at once, with the bonus, and a syndicate could certainly be formed within 24 hours that could pay the debenture-holders out and work the mine. You must remember that you have a mine now with gold found, machinery on the spot, stamps absolutely at work, and, let us hope, almost within sight of a dividend; certainly, with the small amount of money it would cost to pay out the debenture-holders, it would naturally only require a small sum by way of profit to pay a good dividend. To my mind it would simply be robbing the shareholders for the debenture-holders to take the mine away from them. I am perfectly sure of one thing, however, and that is that any man who takes the advice of the writer of the letter referred to would be extremely foolish, and I may add that I should be glad to take from any gentleman the shares which he wishes thus to forfeit. When speaking just now about the directors' remuneration, I should have added that they will be paid, in addition to the £200 per annum, 2½ per cent. on the dividends actually paid to the shareholders. The capital of the new company will be £150,000, as in the case of the Mysore-Wynnad Company. We had a capital of £130,000 before, so that 20,000 shares will remain in the treasury, and they can only be parted with at par; that would be in the event of an additional sum of money being required, because you must not think you are going to get a Mysore or an Oregum for £30,000. I hope this will prove a dividend-paying mine; if it does you will have no difficulty in getting a good price for your surplus shares. The existing company is to be wound up, and the shareholders will receive the same number of shares as they hold in the present company, these being credited with 17s. 6d. paid up. The debenture issue to be made will simply take the place of the old debenture issue; these are bound to be created, because it is a new concern altogether. As regards the question whether the £30,000 to be raised will be sufficient for the purpose required, I can only say, as I have already said, that you must not suppose you are going to that expenditure to get 30, 40, or 50 stamps at work, but if you show that you have a paying mine you will have no difficulty in obtaining any additional capital that may be required. I beg to second the resolution. (Applause.)

Mr. SPENCER supposed the Tank Block was regarded as the most valuable portion of the company's property.

Mr. HERRING: Undoubtedly.

The CHAIRMAN, in reply to a SHAREHOLDER, said the value of the company's water rights was £600 per annum, which alone would pay the directors' fees in the new company, with £400 a year to spare. The SOLICITOR to Mr. Herring, having explained the provisions of the Articles of Association of the new company, and of the agreement proposed to be entered into, the resolutions were put and carried unanimously.

Mr. STEPHENS asked that the meeting might be supplied with the latest information from the mines.

The CHAIRMAN said this had been given in the circular which had been issued. All he could say was that they had sufficiently valuable quartz to justify them in putting forward this scheme. The assays that had been received ranged from 10 dwts. to the ton to 2 ounces 7 dwts., and he expected to receive gradually increasing returns as the stopping ground became more developed. He had been disappointed with the speed that had been made. They had had some unfortunate breakdowns in the machinery, and accumulations of water. He was glad to say, however, that he believed they would soon be at the depth when they would no longer be troubled with water. They had undoubtedly proved their mine, and made certain they had the Champion lode in it. (Applause.) In conclusion, the Chairman said that the battery was working in an admirable manner.

The proceedings terminated with a hearty vote of thanks to the Chairman.

THE PANULCILLO COPPER COMPANY, LIMITED.

A new scheme of arrangement.—"The Central Chili Copper Company."

An extraordinary general meeting of the shareholders in the Panulcillo Copper Company (Limited) was held on Tuesday, at Winchester House, under the presidency of Mr. FRANCIS JOHN JOHNSTON, for the purpose of considering, and, if thought fit, approving the following resolutions:—

That the liquidators be authorized to sell and transfer all the undertaking and assets of the company to a new company to be formed upon the terms of the scheme set forth in the prospectus of such new company now submitted to the meeting.

That the draft agreement now submitted for carrying out the above object and embodying the proposals be, and the same is hereby approved, and that the said liquidators be, and they are hereby authorized, pursuant to Section 181 of the Companies' Act, 1862, to enter into an agreement with the new company (when incorporated) in the terms of the said draft, and to carry the same into effect with such (if any) modifications as they think expedient.

The SECRETARY (Mr. W. Leigh Hunt) read the notice convening the meeting.

The CHAIRMAN having expressed regret at the absence of Sir John Pender, who had been taken suddenly ill with a chill, and so was unable to be present, said: I may inform the meeting first of all that in consequence of negotiations carried on with Chili we have succeeded in inducing the railway company to reduce its charges in the future by one-third. Furthermore, we have submitted the prospectus to the creditors in London, who are so well satisfied with its terms that they have consented to take payment for their debts in priority shares. I can give you no better assurance of the confidence they repose in the undertaking than that. I may further state that letters have been received of a private nature from Chili, which encourage us to hope that the expectations held out in the prospectus will be fully realised. With these preliminary remarks I will ask Mr. Leigh Hunt to read the prospectus.

Mr. HUNT then read the proposed prospectus of the Central Chili Copper Company.

The CHAIRMAN, continuing, said: With regard to that prospectus I may say it has been drawn up after consultation with several of

the leading shareholders, and the principal of the extension of the priority shares is based on the idea that, in consideration of their taking these priority shares, the creditors should be entitled to 10 per cent. dividend when they are paid off. Then those shares will simply become ordinary shares. The merit of the scheme is that it preserves the interest of the ordinary shareholders, and gives them a chance of keeping a valuable property. There is nothing else, I think, which requires explanation; but I shall be glad to answer any questions you may wish to put to me. I beg, in conclusion, to move the resolutions.

Mr. EUGENE A. J. GOLDSCHMIDT, Paris, seconded the resolutions, saying that the proposals they embodied had received the assent of every one of the shareholders with whom he had spoken on the subject.

A SHAREHOLDER supposed that a great many of the 14,000 shares offered to the shareholders had already been applied for.

The CHAIRMAN replied in the affirmative, and said the scheme seemed to offer the only chance of keeping an interest in the property for the shareholders. If the proposal were to fail, which he did not think would be the case, there would be no other alternative than for the liquidators to sell the property at a cheap price they could get.

Mr. DRAKE, of Messrs. Braham and Co., explained to the meeting the salient points of the agreement, saying that it was between the old company, and the liquidator and the new company, and provided that the old company should sell practically all of its undertaking and assets to the Central Chili Copper Company, together with all contracts, if any, which it had got running, in consideration of which the new company should discharge all the debts and liabilities of the old company, including all the expenses of winding up. In further consideration of this, it was provided that every member of the old company should be entitled to request of the new company that there should be allotted either to him or his nominees one priority share in the new company in respect of every four shares in the old company, and such shareholder as availed themselves of this privilege should also be entitled to receive two ordinary shares of the Central Chili Copper Company of £1 each fully paid, in exchange for each share they hold in the Panulcillo Copper Company. In conclusion, the agreement contained certain provisions to meet the cases of shareholders holding less than four shares, or whose total holding was not a multiple of four.

The resolutions were then put and carried unanimously.

The CHAIRMAN, at the close of the meeting, mentioned that an application had been received from a gentleman who was anxious to take up any shares not applied for. There was every reason to believe the scheme would be a success.

The proceedings terminated with a hearty vote of thanks to the Chairman for presiding.

WHEEL BASSET.

Loss of £847.—Call of 3s. per share.

A quarterly meeting of the shareholders was held on Tuesday, Mr. W. MCKEAND presided.

The statement of accounts submitted by Mr. R. Rendie, the purser, showed receipts, £4690 12s. 3d.; expenditure, £5538 0s. 6d.; a loss of £847 8s. 3d.

AGENTS' REPORT.

Wheel Basset, April 11th.—To the Adventurers.—Gentlemen: The 240 end east of winze on Middle lode is driving at £4 per fathom, producing low quality tin stone. We have driven 10 fathoms more to get under our bunch of tin zone down below the 23 fathom level on the flat lode. The 230 end east of main cross cut on Wheel Basset great lode is driving at £5 10s. per fathom, producing stamping work. The 230 end west of main cross cut on the south lode is driving by boring machinery at £3 10s. per fathom, lode poor at present. The 230 end west on flat lode is driving by boring machinery at £3 10s. per fathom, producing good stones of tin, but nothing to value at present. The 230 cross cut south of flat lode 30 fathoms east of main cross cut is driving at £5 per fathom. It appears to us that at this point the flat lode and the Wheel Basset great lode have junctioned. The lode for 10 fathoms wide is worth £15 per fathom; the end at present is in the Wheel Basset great lode, producing stamping work. A rise in back of the 230 fathom level on new lode worth £7 per fathom; rising at £3 per fathom. A stop working in the back of the 230 fathom level is worth £3 per fathom; stopping at 3s. 6d. per ton. A stop working in the back of the 230 fathom level is worth £15 per fathom; stopping at 3s. 6d. per ton. We have two stop workings in the back of the 230 fathom level on the south lode at £3 10s. per fathom; worth £12 per fathom each stop. The 230 end west of winze is driving by boring machinery at £7 per fathom; lode worth £7 per fathom. The 230 end east of winze is worth £20 per fathom; driving at £7 per fathom. A stop working in the back of the 230 fathom level is worth £20 per fathom; stopping at 3s. 9d. per ton. A stop working in the back of the 180 fathom level is worth £15 per fathom; stopping at 3s. 9d. per ton. The 170 end west of Grace's shaft is worth £3 per fathom; driving at £7 10s. per fathom. A stop working in the back of the 170 fathom level is worth £12 per fathom; stopping at 4s. 6d. per ton. We have at present 125 men working on the work; also six pitches working on tribute by 12 men at 12s. in the £2 standard £10 10s. per ton for tin. Total employed in every department underground, including shaftmen, timbermen, trammers, and filers 158 men. We have stamped 5478 tons of stuff against 6300 tons of stuff last quarter. Our produce is 45 lbs. of tin per ton of stuff against 37½ lbs. of tin per ton of stuff last quarter. The reduction of 900 tons of stuff last stamped is mostly accounted for by our paying an extra 3d. per ton to our men for sorting out the granite from the poorer quality of their stuff, which saves us the expense of stamping and dressing stuff in which there is no tin. The loss of £847 on the quarter's working is again very disappointing to us. We have reduced our labour costs £329, and have done all we could do to meet the present low price of tin, at the same time continuing to explore our mine with all despatch, in which we hope and believe we shall be successful.—We are, gentlemen, your obedient servants, WILLIAM JAMES, CHARLES CLEMENS, JAMES ANDREW.

The CHAIRMAN said: The loss is not very great, but still it is on the wrong side, and the committee and myself wish it were on the right side. We are developing our mine with boring machinery, and carrying on our operations with all the energy which a well-managed mine should adopt. So far, we have not met with the success we anticipated. At the bottom of the mine we have a very rich bunch of tin, but I regret to say through this winter we have not been able to take it away by stopping it in a miner-like manner. Our manager hopes that when the weather gets a little finer, with the winze we have in the bottom of the mine, he will be able to send out a crosscut and cut this bunch of tin, and various other little things there. He is very sanguine of better success than we have had. Had we got our usual price for tin, we should have been able to make both ends meet, but, along with other tin mines of the neighbourhood, we are having a very low price, and must hope that trade and commerce will improve and the price of tin again advance. We have lost £847 8s. 3d. on the quarter's working, and are altogether £970 17s. 3d. in debt. I propose that the accounts for the quarter ending March 31, 1894, be received and passed, and that the committee and agents' reports be adopted, and that the balance of £970 17s. 3d. be carried to the debit of the next account.

Mr. HENRY OLDS (St. Just) said it was necessary to make a call, so he moved that a call of 3s. per share be made to meet the present liability, payable on or before July 2, with an allowance of 5 per cent. on all paid on or before that date.

The CHAIRMAN seconded, and the motion was carried.

BOOTSER LAND AND MINING COMPANY (LIMITED).—An extraordinary general meeting of this company was held at Cannon-street Hotel, on Tuesday, Mr. J. W. Chisholm (the Chairman) presiding, for the purpose of considering with the directors as to a proposal for the disposal of the whole of the assets of the company in South Africa to the Consolidated Gold Fields of South Africa (Limited), or its nominees, for the sum of £47,500, payable as to £7500 in cash, and as to £40,000 in fully-paid shares of £1 each in the Gold Fields Deep (Limited), and to pass resolutions as to the expediency of accepting or refusing such offer. A motion was put in favour of accepting the offer; but an amendment, moved by the Earl of Denby (a director), that the contract be not confirmed, and that the offer be rejected, was carried by a large majority, the offer being thus rejected.

JOE'S LUCK AND BON ACCORD.—An extraordinary general meeting of the Joe's Luck and Bon Accord (Sheba) Gold Mining Company (Limited) was held on Wednesday, at the Cannon-street Hotel, E.C., when the resolutions for voluntary liquidation and reconstruction, passed at an extraordinary general meeting held on the 10th inst., were confirmed.

THARSIS SULPHUR AND COPPER COMPANY, LIMITED.

A successful year.—Acquisition of the Lagunzo Mine.
12½ per cent. dividend.

The ordinary general meeting of the shareholders was held on Wednesday, in the Merchants' House, Glasgow, Sir CHARLES TENNANT, the Chairman, presiding.

The report having been read as follows:

The CHAIRMAN, in moving the adoption, said:—Considering the very unfavourable character of business, both at home and abroad, during the period under review, the result which we have put before you is, we think, better than could have been anticipated; such, at least, was the feeling of the board and of your manager when the final figures of the balance sheet were placed before us.

Copper, on which our profits mainly depend, has ruled very low—the average for several months of G.M.B.'s was only £41 12s. 6d., and for the whole year it was £43 15s., against £45 12s. 9d. in 1892. The continuous fall in the value of silver was another drawback. The price of pyrites remained the same, but the copper contents of our ore were rather lower, so that the past year was seriously handicapped against the year which preceded it. We have happily, however, through good management, obtained results which enabled us to pay a dividend of 12½ per cent., after devoting out of profits £47,343 to the writing down of our mines, railway, and works in Spain and in this country. The details of our operations are given fully in the report. The total quantity of mineral raised was 610,822 tons, against 504,706 in 1892—an increase of 106,116 tons; the quantity exported 250,250 tons, against 235,162 in 1892—an increase of 15,088 tons. The cost of extraction was a little less, and of freight home the same, so that the cost of ore landed in this country has been a fraction lower than that of last year. The ore has been, as I have already said, rather poorer in copper. To maintain our usual production on the mines we have been obliged, therefore, to send a considerably larger quantity of mineral to the cementation department. Our production in this department is mainly dependent, as you are aware, on the supply of water. At Tharsis this has been fairly sufficient, but at Calanas, where the rainfall was only 23.98 inches, against 33.45 in 1892, and where our reservoirs are not so ample as at Tharsis, the supply has been very inadequate. The precipitate produced and available for our metalworks has thus fallen short of the previous year by 398 tons; and, in consequence of the diminished quantity, the cost has been somewhat higher. The deliveries of pyrites to consumers have been 248,478 tons, against 233,443 in 1892—an increase of 15,035, which, considering that the deplorable coal strike in the Midlands interfered seriously with many of the chemical works in that district, we cannot but regard as extremely satisfactory. The metal works have gone on steadily and well, though the coal strike in South Wales, as well as in the Midlands, necessitated our paying for a time a higher price for coal. Our Widnes works have been duly handed over to the United Alkali Company, in terms of the agreement announced to you at our last annual meeting. This transaction was altogether a necessary one in our own interests. We could not have kept these works fully supplied with cinders. As it now is, we have sufficient supplies in the Newcastle district to enable us to restart our Willington works, which have been lying idle for about two years. They are now, I am glad to say, in full operation. Our production of both copper and iron ore was under that of 1892—the process costs about the same. We got, however, 8d. per ton more for the iron ore, which, on a delivery of 159,000 tons, forms a pleasant addition to our profit and loss account. The returns from the extraction of gold and silver were good, and but for the fall in silver to which I have alluded, would have been considerably in excess of 1892. We will now look for a moment at the balance-sheet. On the assets side our mines stand at £185,000, against £200,000; and our railway, piers, and rolling stock at £203,630, both being £15,080 less than last year. We have made considerable additions to our plant in houses, service roads, and railways, chiefly in Calanas; but with our usual depreciations this asset of "works, buildings, and machinery in Spain" stands at £10,434 less than in last balance. At home we have had to spend a good deal of money on our Widnes works, so as to hand them over in a perfect state. Notwithstanding this exceptional outlay, this asset in Great Britain stands at £1975 less than in 1892. Our stocks-in-trade in Spain are £11,870 less, and in Britain £31,124 more, consisting almost entirely of an increased quantity of refined copper. On the other side of the balance sheet, our debentures are now reduced to £51,100, which we look forward to paying off partly during this year, and the remainder in 1895. £500 has been added to the reserve fund, bringing it up to £6500. Our balance sheet never presented a more wholesome appearance than it does to-day. There remains £170,851 17s. 3d. to the credit of profit and loss account, which enables us to pay a dividend of 12½ per cent., carrying forward £14,601 17s. 3d. to the credit of the current year. I will now, as on former occasions, glance at our prospects for 1894. We have begun the year with pyrites contracts, according to the consumers' estimates, of 200,000 tons, at a moderate advance over 1893. With the stocks of burnt ore on hand we should, if the consumption is maintained, have full supplies for all our metal works; and though Willington will not make up altogether for the loss of Widnes, I still look forward with confidence to our usual good results from this department of our business. The uncertain and most important element is again copper. The agreement with the American producers came to an end in June last, and since that date the market has remained in a thoroughly disorganised state. Excepting from America, whose shipments have been greatly in excess of former years, the supplies from other sources, including Chili and Australia, have been under an average. The consumption, moreover, has kept rather ahead of the total production; the statistics, in fact, are decidedly favourable, and there seems no good reason for the present abnormally low prices. We think, therefore, that as commercial matters improve in America, of which there are now, we hope, some signs, we may look forward to an improved market. The system of contracting on the basis of the monthly average of G.M.B.'s has worked so well for us in the past that we have again acted upon it, and have placed a considerable portion of our output for the current year at a good premium over the price of Chili bar—an advantageous contract which could not now be repeated. By this method we secure, as you will see, an absolute sale at the fair average of the year. Of iron ore our balances on contracts at the end of the year, and our sales to this date, amount to 141,000 tons at about the average prices of last year. The purchase of the Lagunzo mine will add, we hope, during the current year to our production of copper. We regard the acquisition of this mine as a very favourable one, and likely to prove a valuable source of revenue in the future. At Tharsis and Calanas, with an average rainfall, we look for at least as good a production of precipitate as last year. With these observations, you can form some idea of the position and prospects of the company for the current year, copper remaining

always the uncertain but most influential factor in our results. In conclusion, I have again to express our great obligations to our manager and staff, both here and in Spain, for the zeal and ability which they have shown in the conduct of our affairs. Before sitting down I feel it my duty, and a very sad one, to refer to the great loss the company has sustained in the death of our esteemed colleague, Mr. William M'Ewen. He was well known to very many of those whom I have the honour of addressing, so that it is hardly necessary to tell you how earnestly he devoted himself to his responsibilities as a director, and how deep an interest he took in all that concerned the welfare of the company. We have still the honour of having with us our illustrious colleague, Monsieur Barthélemy St. Hilaire, now in his 90th year. I had the pleasure of an interview with him in Paris last week. He had been poorly, but was much better; his mind as acute and brilliant as ever. We could not, however, expect him to come over to our meeting to-day. He still regularly attends the meetings of our French co-directors, and shows no diminution in his interest in our affairs.

The CHAIRMAN then moved the adoption of the report and balance-sheet, and that a dividend be declared of 5s. per share, equal to 12½ per cent. on the profits of the year.

M. DE BERLY, Paris, seconded, and the motion was adopted. The proceedings closed with a hearty vote of thanks to the Chairman.

SCOTTISH AUSTRALIAN MINING COMPANY, LIMITED.

A satisfactory dividend despite colonial depression.—
A promising outlook.

The half-yearly general meeting of the Scottish Australian Mining Company (Limited), was held yesterday, at Winchester House, the chair being occupied by Mr. GEORGE SMITH.

The SECRETARY (Mr. F. W. Turner) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, the circumstances under which we meet you to-day present features of a varied character. The Australian colonies are now feeling the full force of the current of depression and loss which the severe financial crisis of last year is drawing after it. The restriction of business in all directions, brought about by enforced economy on the part of everyone, from the Governments downwards, and consequent reduction of the purchasing power of the people, is affecting all departments of trade and commerce. I make this remark with special reference to the Australian colonies, but it is one which I believe is equally applicable to this country and most parts of the civilised world. It is not, therefore, a matter for surprise that the coal trade in Australia is much reduced in volume. The general Newcastle trade for 1893 is reported to have fallen short of that of 1892 by over 300,000 tons, while the arrivals of shipping at that port showed a decrease of as many as 450 vessels. These facts readily account for the diminished business done by this company. Then as regards the profits from that business, it has been found impossible to prevent a considerable fall in the price of coal. Ten shillings a ton was what we were receiving a year ago, and that is by no means a high price for getting a ton of coal out of the earth, preparing and cleaning it, and carrying it to port, and putting it on board a vessel. But that price fell away to 9s., and, further to 8s., and I am not sure that we have quite touched the bottom yet. The reduction of trade and of prices made it necessary to reduce costs, and an arrangement was, after some discussion, come to with the men to reduce the minimum wage for heaving by 4d. a ton. But this reduction does not sufficiently meet the situation, and I think some further lowering will be necessary. During the slack trade that has recently prevailed the men, I am sorry to say, have had very little work and earned poor wages. But the fall in price has had a good effect upon the trade, which has become much more satisfactory (so far as we are concerned, at least) since it took place, and if the men can be persuaded to take a large view of the question, they will see that their permanent interests lie in accepting some further reduction, and finding their account in more regular employment, and consequently better earnings, although obtained at a less rate per ton. There are several competitors with Australia in the coal trade of the world, and it is my belief that we shall do best by keeping the price low for the present, in order to regain trade that, during the time of higher prices, has passed into other channels. If the men recognise these facts, they will not hesitate, I should think, to meet reasonable proposals of the masters in regard to the heaving rate. I may just add that our own men have worked steadily at such business as has been available to us during the past half-year. The agreement between the leading northern collieries came to an end, by effluxion of time, at the close of last December. There were many points connected with it which, in the present circumstances of the trade, were not working well, and I think it is well that the change has taken place. Outside collieries that were competing at just a little below the price at which members of the Association were bound to sell, have now no advantage over the stronger collieries, and in this respect the change has had a salutary effect. The trade will, I think, in its present freedom get a more solid foundation, and when business generally improves we shall probably be able to earn better profits. What I have said so far represents the unfavourable features of the present situation, and I am glad to allude to a transaction which I believe has only been made possible by those circumstances which have pulled down our profits. The report has informed you that we have purchased the Barwood Colliery. In the pressure to realise property of all kinds which recent financial disasters brought about, many coal properties have been offered to us. Mr. Crouace thought it would be well to obtain Barwood, if possible, and, after a very long and carefully conducted negotiation, the effort has been successful. Barwood is almost contiguous to Durham, possesses a fine seam of coal of from 5 feet 6 inches to 6 feet 9 inches in thickness, of a character that is well known and appreciated in the colony, and is well equipped with machinery and plant of all kinds. Two railways for carrying the coal to port are available to it. Indeed, in one of these lies one of the attractions of the purchase, for, as this same railway passes over the company's Durham property, it is possible that advantageous arrangements may be made for utilising it for Durham coal, and thus the outlay which it was contemplated to make (some £25,000) in building a separate line would be saved. The matter is under consideration, and I entertain a confident opinion that we shall shortly hear that it has been favourably settled. If, then, gentlemen, we save our outlay of £25,000, substituting for it a moderate wayleave charge, and buy an adjoining and valuable colliery, in working order, for £27,000, I have little doubt of what your judgment of the action of the board and Mr. Crouace in this matter will be. We think that a very important addition has been made to the company's colliery property at a very small cost, and that the future is likely to make this still clearer. I may mention one more feature of the transaction, and that is that we not only secure a valuable colliery, but get one competitor less in the trade. I regret to have to mention the death of Capt. Holman, at Cadix. He was a very faithful servant of the company, and although it was not given to him to attain his desire of making the property a success, we are quite sure that he worked persistently and honestly to that end. An arrangement for taking care of the property has been made with his widow and sons until it shall be determined what should be done with this attractive, but, at the same time, puzzling possession. At present, we must refrain from spending more money upon it. Some overtures were

recently made for taking the property on tribute. A proper arrangement of this kind would not be undesirable, and we shall not fail to take advantage of anything that may be of a suitable character, and seems likely to promote the company's interests, and ensure the proper working of the mine, whether for copper or gold. Gentlemen, if we are unable to-day to offer you a good dividend, I submit that there are features of much encouragement in the prospects of the company; we may have to wait yet awhile for better times in the coal trade, but I entertain a confident expectation that these will come in due time. Australia is not always going to remain in her present condition, and with her recovery from depression and disaster will come the opportunity of those who have held through the stormy weather, and made preparation for utilising the brighter time when it again comes round. I beg to move—that the report of the directors be received and adopted, and that the dividend proposed therein at the rate of 4 per cent. per annum upon the paid up capital of the company at 31st December, 1893, £206,253, be confirmed, the same to be payable, free of income tax, on and after Saturday, the 5th May next."

Mr. F. P. WARD seconded the resolution.

Mr. FERGUSON was not going to bemoan the prospect of a lower dividend for the year than had ever yet been received. Indeed, when he remembered the very serious depression which had generally prevailed since the last year in the Australian colonies, the collapse of numerous banks and loan companies, and the general paralysis of business, he would not have been astonished if he had heard that the coal industry had so greatly suffered that it had been found impossible to pay any dividend at all upon this occasion out of the profits. Therefore he did not feel discouraged, but rather thankful, that the dividend was to be at the proposed rate of 4 per cent. per annum. After all, low prices and temporary troubles were not altogether unmixed and unmitigated evils to a strong healthy company like theirs. As the Chairman had said, they tended to weed out the weak ones, to decrease competition, and to afford opportunities for the favourable investment of capital. The most important paragraph in the report was the one which told of the purchase of the Barwood Colliery, with all its accessories, for the sum of £27,000. He had been for so many years a shareholder in the company, and had had so long an experience of what he might term the severe economy and the extreme caution exercised in the management of the board, that when he first heard of the purchase he felt pretty sure it would be advantageous to the company, and he only hoped that the time would not be far distant when the demand for coal from the Barwood Colliery would be at the rate of 1000 tons per day, which they were told was the quantity for which the shaft had been sunk and equipped. He wished, however, to know something more about the lease, how many years it had to expire, what the rent payable for it was, and also whether there were any facilities for effecting a renewal when the term expired. One other observation in the report he would allude to—the reference to the sale of New South Wales coal in foreign markets. He only wished some of it could be laid down in the East Indies and Brazil upon moderate terms. In the course of his business he had sometimes to assist in sending out English coal to both these countries, and by the time it was delivered there it cost 35s. a ton. Now that the very excellent coal of the company had fallen to the low price of 8s. a ton there was surely a sufficient margin between those two values to tempt speculators. He was not going to ask the directors to become speculators in coal as well as workers, but if the matter were well known some people might be tempted to sell coal in the countries he had mentioned at a cheaper rate.

The SECRETARY stated that the Barwood Colliery was held under various leases, which he might summarise by saying that their duration on the whole was about 40 years, with rent and minimum royalty of some £1800 a year.

The resolution was then put and carried unanimously.

The retiring directors, Mr. C. J. L. Nicholson and Mr. R. B. O'Leary, having been re-elected, and the auditors, Messrs. J. R. Frewer and C. G. Roberts, having been reappointed, the proceedings terminated with a hearty vote of thanks to the Chairman and Directors.

RIO TINTO COMPANY, LIMITED.

A satisfactory dividend and a bright outlook.

The 21st ordinary general meeting of the shareholders of the Rio Tinto Company was held yesterday, at the Cannon-street Hotel, the chair being occupied by Mr. H. M. MATHESON.

The SECRETARY (Mr. G. M. Thomson) read the notice convening the meeting, and the minutes of the last meeting.

The CHAIRMAN said: Gentlemen: The time has again come round when we have to meet our shareholders and give our account of the work of the year recently closed. The output of ore from the mines was 1,332,002 tons, containing an average of 2.996 per cent. of copper, as compared with 2,819 in the previous year, and 2,649 in the year before that. Of pyrites, sold under contracts to the United Kingdom, Germany, and the United States, we delivered 499,399 tons, or 33,581 tons in excess of the deliveries of the previous year. In addressing you last year, I led you to expect that the increase would amount to 60,000 tons, and this would have been realised but for the long continuance of the coal strike in England, which compelled our principal customers to shut down some of their works. The consumption of these friends has been resumed on an improved scale. The refined copper brought to market and realised amounted to 18,858 tons, and the copper in pyrites to 11,265 tons, altogether 30,123 tons, being an increase of 674 tons over last year. You will have observed that all stocks of copper, whether refined or in process of manufacture, are carried over at cost price only. The prices for copper during the whole of 1893 have been again very disappointing, good merchantable brands having averaged £43 10s. 6d., against £45 12s. 8d. per ton in 1892, or £1 17s. 2d. less per ton, being nearly £80,000 on our sales. The chief factor in bringing this about has been the state of the American market, the great depression in all industrial undertakings having seriously diminished the consumption of metal there, and led to very heavy shipments being made to Europe. Trade both in England and on the Continent has been in a fairly satisfactory state, and has been able to take over these large quantities, although at the expense of lower prices. As soon as trade in America revives we may expect a turn for the better in prices. We referred last year to the explorations for coal in the province of Cordoba, which had been undertaken on behalf of this company. It appeared to the board very important to secure for the company native supplies of coal, rather than to be entirely dependent on this country for what forms so necessary a feature in our work at Rio Tinto. The explorations undertaken, however, did not prove sufficiently successful to induce the board to persevere, and they have been abandoned, and the cost written off against revenue. On the recent annual visit of a deputation of the board to the mines, everything was found to be going on satisfactorily. The accounts will speak for themselves. It will be seen that the entire cost, including discount and expenses connected with the issue last year of the 3rd mortgage bonds has been written off, and the General Depreciation account now amounts to £440,324 16s. 8d. May I say I regret the absence to-day of our Deputy-Chairman, Mr. Doetsch, who has been seriously ill, and is still confined to his house. This illness, following on a long absence in Spain on a deputation from the board, has delayed somewhat the steps the directors should take in accordance with the Articles of Association, to fill up the vacancies which have

occurred in the board. In the meantime, Mr. J. M. Macdonald, who has faithfully served the company as director for a number of years, does not seek re-election, and the Board propose for your acceptance the name of Mr. Robert William Buchanan Jardine to fill his place. (Cheers.) I will conclude by moving: "That the report and accounts now submitted be received and adopted."

Mr. J. MACFARLAN seconded the motion, and it was unanimously carried.

The CHAIRMAN then moved:—

That a final dividend of 7s. per share, making, with the interim dividend paid in November last, 14s. per share, or 7 per cent. for 1893, be now declared, payable on the 30th proximo, free of income tax.

Mr. SCHREEDER seconded the motion, which was carried unanimously.

Mr. Henry Dootsch, the retiring director, was re-elected, and Mr. Robert William Buchanan Jardine was added to the board. The auditors, Messrs. Turquand, Youngs, and Co., were re-appointed.

Mr. OFFENHEIM: Allow me to move a cordial vote of thanks to our respected Chairman. (Cheers.) We have passed through another year of great depression in the copper market, and fortunately we arrived at some results, which must be considered comparatively satisfactory. We hope that next year will show an improvement, but, in the meantime, I am sure we shall all concur in the hearty vote of thanks to the Chairman for his conduct in the chair, which I have now the pleasure of proposing.

Mr. JOHN THOMPSON seconded the resolution, which was unanimously carried.

The CHAIRMAN having briefly returned thanks, the proceedings terminated.

MISCELLANEOUS MEETING.

NATIONAL BANK OF INDIA.

Satisfactory report.—6 per cent. dividend.—The exchange difficulty.

The ordinary general meeting of the National Bank of India was held on Monday, at the Cannon-street Hotel, Mr. J. R. BOYSON (the Deputy-Chairman) presiding.

The GENERAL MANAGER (Mr. Robert Campbell) having read the notice convening the meeting,

The CHAIRMAN, after explaining that he presided at the request of Mr. John Borradaile (the Chairman of the company), said: In speaking of the report, gentlemen, I think it will be desirable to mention, in the first instance, that we had to contend with exceptional difficulties in the working of the bank during the past year, consequent upon the extraordinary fluctuations in exchange and rupee paper and the continuous fall in the value of silver, aggravated, as the state of circumstances was, and to a very serious extent, by the vacillation on the part of the Government in its attempts to deal with the silver question—(hear, hear)—and in the absence of any indication that we could discover—or anybody else, I fancy—that there was any settled policy on the part of the State in connection with this question. These influences, with others, necessarily brought about complete stagnation in trade, and not only very seriously prejudiced the working and the interests of the bank, but dislocated generally the whole of the commerce with the East. Upon reviewing the past, we feel that we have much cause for thankfulness in being able to place before you, as we have done on this occasion, the very satisfactory results set forth in our report, which enable us to pay a dividend of 6 per cent. for the year, to add £20,000 to our reserve fund, bringing the amount of that fund up to £120,000, to place £1500 to the officers' pension fund, and to carry forward the very substantial balance of £18,692. We think that upon careful revision of these figures and these results, we are entitled to call them very satisfactory, and our confident hope is that you will concur with us in that view. (Applause.) The bank's operations during the past year, and the position of its affairs at the close, are so fully set forth in the report and accounts that I do not propose to trouble you with any remarks upon mere details. It seems to me that I should best perform my duty and enlighten you as to the present position of the bank by stating in general terms that the bank's business, both at home and abroad, and of all descriptions, has improved, and continues to make steady and most satisfactory progress. (Applause.) There has been a considerable increase in the number of our constituents—fixed depositors and others—during the past year, and, in fact, during the past three years, and also in the volume of our business. I would state, also, that there has been no abnormal withdrawal of fixed deposits, showing that we still retain the perfect confidence of our depositors. I would mention, also, that we have no locks-up, our policy always being opposed to business of that description—(hear, hear)—but, with the full knowledge which I possess of the facts and the figures connected with the bank and its operations, I feel justified in telling you that its assets are in a satisfactorily liquid form. Lastly, I think I may state the opinion of my colleagues and myself that we feel justified in looking to the future as both successful and profitable. There are two important matters referred to in the report upon which I would trouble you with a few words. The first is the very satisfactory fact that the whole of the bank's capital is now held in London in actual sterling, and is, consequently, no longer liable to the effects of exchange fluctuation—(applause)—that portion of it which was in India having been brought home at an average rate of 1s. 3½d. per rupee. You are, of course, aware that the subscribed capital of the bank was in sterling, consisting of shares of £25, with £12 10s. paid up. This paid-up capital was placed in India in rupees for working purposes at the value of 2s. per rupee. This basis of value was continued until it became apparent that the value of the rupee was becoming permanently depreciated, and that, therefore, it was incumbent upon the bank to make provision for this depreciation. Accordingly, this important object was steadily kept in view by setting aside portions of our profit, and you will find in the accounts now before you that the amount thus provided to meet this depreciation was £155,500. The difference in the sterling value of the capital in question between 2s. and 1s. 3½d. per rupee was £172,500, and this amount has now been provided by the item of £155,500 already appearing in our accounts as having been set aside, and the sum of £17,000 that will be debited to the accounts of the current half year; so that in future there can be no question of our capital being affected by any fluctuation in the exchange, while the item setting forth the provision that has been made for past depreciations will disappear from the account, and our capital will stand as sterling capital. (Hear, hear.) We consider this adjustment of our capital account most satisfactory. It has often been the cause of anxiety to us in its late form, and it is a great relief to us to feel that there is no longer cause for apprehension on that account. We think it the more satisfactory, inasmuch as it has been entirely provided out of profits, and in this view as to the satisfactory character of this portion of our report I hope you will concur with us. (Applause.) The other matter to which I would offer a few remarks is our claim against the Government of India in connection with our silver that was in transit to India at the time the Indian mints were closed. I must state the conviction of my colleagues and myself that we, in common with the other exchange banks, have been and are the victims of monstrous injustice at the hands of the Government—(hear, hear)—and we cannot but believe that, on a review of the facts of the case, and the removal of the misconception which I think must have existed at the time the decision of the Government was arrived at, that Government will not perpetuate this injustice and withhold from us that

measure of redress to which we are most clearly and most honestly entitled. This, perhaps, is only my opinion; but my impression is that the decision of the Government of India was hastily arrived at under the misconception that the exchange banks, in the shipments of this silver, were entering into speculative operations to the prejudice of their taking Council bills. Now, no impression could possibly be more erroneous, for during the three or four weeks that this silver was shipped, the exchange banks took Council bills in the aggregate to the amount of Rs. 2,60,00,000. That single fact puts an end to this misconception, if it ever existed, and ought to influence the Government of India in doing us that justice to which we so strongly feel we are unquestionably entitled. I formed one of the deputation that recently waited upon Mr. Fowler, the Secretary of State, when we had the very great advantage of being introduced by Mr. Samuel Montagu, one of the very best authorities on a question of this sort that could be found in the City of London. He represented our case to the Secretary of State in a very admirable and, as it seemed to me, a very conclusive manner. Mr. Fowler received us most courteously, listened attentively to Mr. Montagu's contentions, and judging, as far as I was able, from his manner and what he really said, I believe he himself was in sympathy with the banks' cause; but he gave us to understand that it was a question that did not rest with him, or with the India Office, but mainly with the Government of India; and after some further remarks, which I need not repeat, he told us that he would review the matter in consultation with his Council. Although Mr. Fowler was unable to give us unqualified satisfaction, we are, nevertheless, hopeful that some benefit will result from this interview; at all events, we shall have the satisfaction that we exerted ourselves to the utmost in furtherance of the bank's interests. We ask no favour from the Government; what we do ask is simple justice. I do not think I have any further remarks with which I need trouble you; but I must not conclude without saying that for the very satisfactory results we have placed before you today in connection with the past year we are indebted to the able management of Mr. Campbell, our general manager. (Applause.) I have now to move: "That the report and accounts be received and adopted, and that a dividend at the rate of 6 per cent. per annum for the half year ended December 31 last be paid on the shares of the company registered at this date, the same to be payable, free of income tax, on or after the 25th inst."

The motion was seconded by Mr. JOHN BORRADAILE, and carried without discussion.

The retiring directors, Mr. John Borradaile, Sir Stuart S. Hogg, and Mr. A. Dunlop Best were re-elected to their seats.

Messrs. Cooper Brothers and Co. and Mr. William Stansfield having been reappointed auditors.

A vote of thanks was accorded to Mr. Robert Campbell for his able and judicious management, not only during the past year, but at all times.

Mr. CAMPBELL acknowledged the compliment, and asked to have included in the vote the managers and staff abroad.

Mr. H. NELSON moved a vote of thanks to the Chairman and directors. He considered that the position of the bank stood better than it ever did before, and he thought the fact that the board had taken the step of once and for all putting on one side the troublesome and ever-recurring doubt of the Eastern exchange, was extremely satisfactory. It would have saved much loss if the banks and others connected with the Eastern trade had adopted that policy many years ago.

The motion was seconded by General HOPKINSON, and carried, and the proceedings then terminated.

FORBES REEF GOLD MINING COMPANY (LIMITED).—The first general (or statutory) meeting of the Forbes Reef Gold Mining Company (Limited) was held on Tuesday, at Cannon-street Hotel, E.C., Mr. F. H. Faviell, the Chairman, presiding.—The Chairman said they were doubtless aware that this, the first general meeting, was the statutory one, as required by the Companies' Act. The present position was that they were registered on the 3rd of January with a capital of £105,000 in £1 shares (18s. paid); and the agreement was filed on the 20th of the same month. Out of the 105,000 shares 99,000 were taken up, leaving 6000 shares, 95 per cent. were taken by the old shareholders, which he considered very satisfactory. The remaining 6000 shares left in the hands of the liquidator were offered, credited with 18s. paid, and have now all been taken up. A call of 1s. per share had been made, bringing in £5000, and he hoped there would be no necessity to make any further call at present. During the last three months the returns of the mine have decreased, due to the wet season, and a quantity of low grade ore which had fallen into the workings. They had not succeeded in striking the reef at Forbes in the drive from the bottom of the main shaft, and though a large body of quartz over 20 feet wide has been cut, it was not payable. Mr. Wright, the managing director in South Africa, was very sanguine of striking the old lode at that level. Ten head of stamps had been erected, which are to be driven by an electric motor. An appreciable reduction in the cost working was expected from the use of water power. Last week they received a telegram stating that 10 more stamps were to be erected. Alluvial gold and stream tin were found on their property, which covered 80 square miles, and Mr. Wright advised them to throw it open under certain conditions, to prospectors. He thought there was nothing more to tell them, but if any gentlemen like to ask any questions he should be pleased to answer them. In answer to an enquiry the Chairman stated that the accounts of the old company were not yet complete. The proceedings then terminated in the customary manner.

WHEAL KITTY.—CALL OF 4s. PER SHARE.—On Friday, 20th, a four-monthly meeting of shareholders in Wheal Kitty was held on the mine, when the chair was occupied by Mr. E. Vine. The accounts showed—Labour costs, £1854; merchants' bills, £964; dues, £14; and other items, making the expenditure £2835. The assets were—28 tons 8 cwt. 2 qrs. of tin, £1249; carriage of tin ore, £7; making £1256. There was, therefore, a loss of £1579, increasing the balance against the mine to £1600.—Captain W. Teague, in supplementing the agents' report, said the report was not a very brilliant one. Unfortunately, their bottom levels had not turned out as they had had reason to expect. So they had decided for the present to put a larger force in the 172 driving east, where they had a little tin, to see what lode was standing there. The 60 fathom level driving east of crosscut on Joe's lode had rather improved in the past fortnight. The prospects in the bottom level were not very bright, but in the south part they had reason to hope for something good yet. (Applause.)—The accounts were adopted on the motion of Mr. Josiah Teague, seconded by Captain Rich.—The Chairman said the loss was a serious one, and after carefully considering the matter, the committee thought it would be wise to make a call of 4s. per share, which, after allowing for discounts, would produce sufficient to clear the books. He moved that a 4s. call be made.—Mr. G. C. Hancock seconded, and the motion was carried.—Thanks to the agents, the committee and Chairman followed.

THE CORNWALL MINERALS RAILWAY BILL came before the Committee on Unopposed Bills on Tuesday, Mr. Mellor in the chair, and was allowed to proceed, there being no opposition. The Bill authorises this company to acquire additional land for the improvement and enlargement of their station and works, and to create additional stock in connection with the Fowey undertaking to raise additional capital of £30,000 in respect of the Goonbarrow Branch, and for other purposes.

A MOST WONDERFUL BUILDING up of the constitution takes place after Holloway's famous medicines have been used for a reasonable time. They are pre-eminent above all other remedies, more particularly for the cure of liver complaints and disorders of the stomach; carpenters, bricklayers, &c., would find the ointment invaluable for curing wounds, cuts, sores, and bruises. Men in all conditions of life find it of incalculable benefit, as it penetrates internally, and thus strikes at the root of the ailment. The pills act like magic in curing low spirits, and they repel all attacks on the nerves through excitement, excessive heat, brain worry consequent on business troubles, &c. They purify the blood, and give a new lease of strength to the constitution.

REVIEWS.

A BOOK FOR THE INVESTOR.

How to Operate Successfully in Stocks. 27th edition. (Published by the Universal Stock Exchange, Limited, 1, Cockspur-street, Charing Cross, S.W.)

The value of this little book to the investor is pronouncedly evidenced by the fact that it has already reached its 27th edition. It seems to us that it is the very guide he needs. The investor, as a rule, is woefully ignorant of Stock Exchange transactions. He has too little knowledge of the way in which operations are carried on, and likewise exhibits a wonderful want of interest in the stocks in which he is concerned, and when, at some time, it is necessary or desirable for him to change his investment, he has to depend entirely upon the advice of his broker as to what his next step shall be. "At some time or other, every investor must either buy fresh stocks, sell his old ones, or run the risk of decreasing his income. When this is the case, he goes to his broker with all the unwitting innocence of the sheep to the shearer. In the broker's office he finds himself in a strange country, where he understands neither the language nor the customs of the people he meets there, and after a more or less unsatisfactory interview, he goes home with the knowledge of having given certain instructions with only a dim idea as to whether they were the best under the circumstances. In due time he receives contracts and statements from the brokers, which he is bound to accept in blind faith, simply because he does not know how to examine them, and detect overcharges." To enlighten him, and to guide him aright and safely in these mysterious and unknown ways is the object of this book. It is to his interest, therefore, to obtain a copy of it, so as not to go stumbling on, as he has hitherto done, in an unknown region, where obstacles of many kinds abound to trip him up.

FIELD GEOLOGY.

A Text Book of Field Geology. By W. H. Penning, F.G.S. 2nd edition. (Ballière, Tyndall, and Cox, London.)

Geology is sometimes looked upon as a science which has little bearing upon the welfare of mankind or the progress of the arts, and yet a little reflection will demonstrate its usefulness, not only to the engineer, whether civil or mining, but also to the agriculturist, and the ordinary household interested in the question of clay or gravel, damp, rheumatic river valleys or breezy chalk downs.

Mr. Penning's book on "Field Geology" appeals to all these classes, and the fact that it has attained to its second edition shows that its value has been fully appreciated. We are most of us familiar with the many-coloured maps of the Geological Survey, but few of us are aware of the skill, time, and labour required for their preparation. In the first few chapters of his book Mr. Penning takes us over an ordinary tract of country in England, and with the trained eye of a geologist skilfully marks the lines of outcrop of the various strata. Here an old brick pit, there the stones in a wall, the soil of a field, or the very vegetation itself, afford him the information he seeks; in some places the abundance of snails tell of a limestone soil, while in others the presence of partridges, rabbits, and snakes indicate a light sandy one, and as the surface is but the decomposition of the subsoil, so he builds up his geological structure and produces "sermons from stones and books from running brooks."

The book, however, is meant for the practical geologist, and in it he will find rules for the tracing of outcrops, the detection of faults, and the finding of the true dip, with examples taken from the tertiary, secondary, and primary divisions of the earth's crust. This is important, as it interests not only the geologist pure and simple, who can go into raptures over the tail of a trilobite, but also the engineer, who looks upon the outcrop of a coal seam or of a lode with a strictly practical eye. The various instruments used in geological surveying and levelling are described, and tables given for facilitating the work in the second part of the volume; and then we pass on to the third, which deals with lithology, including metals and minerals, as being constituents of rocks. This division of the book is of especial interest to mining men, as it treats of the characteristics of the various rocks and minerals, and gives tests for their determination and simple instruction in the use of the blowpipe and a few chemical reagents.

The fourth part of the work has been written by Mr. A. J. Jukes-Browne, B.A., F.G.S., and is devoted to paleontology on the science of fossil organisms, and the laws which regulate their occurrence in the earth's crust. The practical man is apt to look down upon the collector of fossils, and to conclude that his researches can lead to no beneficial results. Mr. Jukes-Browne, after giving instructions as to the method of following this branch of science, points out its practical value, especially in the history of coal mining. We can, indeed, corroborate his remarks upon this point, for we also know of money having been spent in the sinking of a shaft for coal in the black shales and slates of the lower rocks far below the coal measures, which would have been saved if the owners had possessed even a rudimentary knowledge of paleontology, and could decipher the mysteries of the fossil remains wound up in every bucketful of debris from their pit. Most of the readers of *The Mining Journal* are, from the very nature of their calling, interested in geology, especially in its practical aspect, and it is precisely from this point of view that we see much to recommend in the book before us.

SURVEYING.

Surveying and Surveying Instruments. By G. A. T. Middleton. (London: Whittaker and Co.)

This book forms one of the "Specialist" series, and treats only of the surveying instruments used for surface surveys and the methods of employing them. Under these circumstances its utility to mining men is limited, although they will find in its pages much useful information relative to the surveying of properties, either with the chain alone or by means of the theodolite. The author, however, does not pretend to be a mining man, and presents his book to the public as a concise work upon land surveying, in which modern instruments and modern methods of working are described. This, in his own words, is his intention, and, after stating that the volume is a reprint of a series of articles which have already appeared in the *Building News*, he devotes his first two chapters to a description of a survey with the chain only.

The instructions given on this subject are practical, and the errors likely to arise, whether in the making of the survey or in its plotting, are carefully pointed out; while the various dodges in use by surveyors for measuring inaccessible distances and overcoming obstacles in the direction of the chain line are fully explained. We could wish that the illustration of this method had been other than that of a survey of a tennis ground at Clapham, for the lines of the engineer are rarely cast in such pleasant places. The ground he usually has to operate upon is far rougher than that chosen in the example given, and although the author gives instructions for ranging out a straight line, we miss the all-important hints of which the young surveyor especially has need, relative to chaining on slopes.

The two following chapters are given up to a description of levelling and the improved forms of instruments employed for that purpose. The general instructions given of the use of the instruments, and of the running of lines of section and contour lines, will be found useful; but, again, we think the author has erred in choosing as an illustration a short line of section across Wandsworth Common, which, although sufficient for building surveys, does not present the variety of difficulties to be met with in running lines of section for engineering work. Examples are given of the newest forms of instruments for levelling, manufactured by Messrs. Watson and Sons and Mr. W. F. Stanley, and their peculiarities are pointed out, while the subject is brought to a conclusion with a short description of the aneroid.

Chapter V. is given up to a description of the uses of angle-measuring instruments, followed in Chapter VI. by details of the instruments themselves, such as the theodolite, box sextant, and prismatic compass. These two chapters strike us as being the best in the book, and give just sufficient instruction into the art of measuring angles and calculating distances, without diving too deeply into the mysteries of trigonometry.

The book is brought to a close with a short chapter describing the instruments used for measuring distances without the use of a chain or laying down a base line and taking observations from its extremities. The principal instrument of this description is Stanley's tachometric theodolite, which has all the movements common to the ordinary theodolite, combined with an arrangement of the pointers or hairs upon the diaphragm, which enables the distance to be determined direct from the reading of a levelling staff multiplied by a fixed constant. We have often felt the need of such an instrument when running trial lines of section across the country when it was not necessary to fill in all the details, and as with this theodolite all distances up to 15 chains can be read with absolute accuracy, it will be a welcome addition to the outfit of the surveyor.

On the whole, the book leaves a favourable impression upon us. With its aid and plenty of field practice the young surveyor should be able to master his instruments, and overcome the difficulties which are constantly cropping up in the daily practice of his profession.

The mining man will find it useful as a guide to the surface surveying of properties, but he must not expect to obtain from it any information relative to his own speciality of underground surveying. This the author does not profess to teach, but we disagree with him in the last sentence of his book, where, speaking of miners' dials and other special instruments, he says "they are scarcely in sufficient common use to necessitate special description here." Readers of this Journal, and especially professional mining men, will probably smile at this remark, for which, however, the author must be forgiven on account of the really valuable information he has supplied in other parts of his book.

PUBLICATIONS RECEIVED.

In sending books for review publishers should state their price.

"Engineering Chemistry." A practical treatise for the use of analytical chemists, engineers, ironmasters, ironfounders, students, and others. By H. Joshua Phillips, F.I.C., F.C.S. (London: Crosby Lockwood and Son.)

Potts's Mining Register and Directory for the Coal and Ironstone Trades of Great Britain and Ireland, 1894-5. Sixth annual issue. (North Shields: W. J. Potts, Mining and Shipping Publisher.) Price 10s. 6d.

Cassell's New Technical Educator. Part 19. Price 6d. Universal Stock Exchange Market Report. Journal of the Society of Arts.

"EL CALLAO" GOLD MINING COMPANY.

SUMMARY OF THE SUPERINTENDENT'S REPORT.

MR BARRY SEARLE, the superintendent of the above-named company, reports as in part follows, for the year ending December 31st, 1893:—

"EL CALLAO" MINE.

RECEIPTS AND DISBURSEMENTS.

ORE: The ore receipts for the calendar year, 1893, were as follows:—

Hoisted from No. 5 shaft ..	13,378 tons.
" " No. 6 " ..	22,984 "
" " No. 8 " ..	3,723 "

Total 40,085 tons.

For the past year all assorting of ore has been done in the mine, and no account of the waste rock has been taken.

BULLION: The receipts for the year (December 17th, 1892 to December 15th, 1893), amounting to 34,537.29 ounces of gold, valued at 3,315,579.84 francs, was produced as shown below:—

	Tons crushed.	Ounces produced.	Yield per ton, av.
High grade pillar rock ..	6,000.00	13,220.00	2.20
Ordinary ore ..	34,712.00	21,317.29	0.61
Total	40,712.00	34,537.29	0.85

DISBURSEMENTS.—The expenditures for the calendar year, amounting to 2,331,371.15 francs, are segregated as follows:—

	Cost, francs.	Per ton.
Mine account (hoisted), 40,085 tons ..	1,662,265.77	41.46
Mill account (crushed), 40,085 tons ..	308,798.96	7.71
Taxes and conveyances of bullion and coin ..	75,112.16	1.88
Operating Costs	2,046,176.89	51.05
No. 8 shaft	131,870.07	3.29
Exploration Diamond Drill	10,381.24	0.26
Railroad, Ore-bins, &c.	142,942.95	3.56
Total	2,331,371.15	58.16

The exploration and development work amounts to 1569.10 feet of drivings. The above statements do not include "La Colombia" and "La Union" properties.—MINE: The first of the year it was decided to extract all available pillars in the lower portion of the mine, and abandon same, on account of low returns from the bottom stops, and the increasing expense of working through No. 6 shaft; in accordance with this policy, all pay rock that could be secured below No. 5 level was removed; when on July 17th No. 6 shaft was finally closed, and pumping discontinued at this station. The mine above No. 5 level has, since this date, July 17th, been worked through No. 5 and No. 8 shafts. The location and a short description of the workings will be found under the headings of the different shafts.

MILLING.—The tonnage and expenses of the 60 stamp mill for the past calendar year were as follows:—

	Tons Crushed.	Cost, francs.	Cost per ton, francs.
"El Callao" Mine ..	40,085.00	308,798.96	7.71
"La Colombia" Mine ..	4,867.40	29,204.44	6.00
Total	44,952.40	338,003.40	7.50

The small tonnage, and resulting high cost per ton, was due to the failure of "El Callao" Mine to produce sufficient pay rock to keep the entire mill in operation. In August a two weeks' stoppage was occasioned in making necessary repairs to machinery, &c. The tailings from "El Callao" ore have shown an average assay value of about 4 dwts. per ton; while "La Colombia" tailings have averaged about 15 dwts. per ton; this high loss on Colombia ore is due to the fact that it carries considerable tale and rich sulphurets; blanket concentrates of these tailings for December averaged 5 ounces per ton.

"EL CALLAO" RAILROAD.

In March it was decided to build a Narrow Gauge Railroad from "El Callao" Mill to "La Colombia" and other mines owned and controlled by the Company, and thus concentrate all milling at "El Callao," and further supplying the mines with wood, timber, &c. Grading was commenced April 3rd, and the road to "La Colombia" and "El Callao" Mines put in operation December 15th. The grading to "El Tigre" has been completed, and preliminary surveys made to the "Remington," "Santa Maria," and "San Felipe" Mines, to which points the road will be extended in due time; the route to and location of the different mines are given on plan (No. 1) of "Nueva Providencia" District. The cost of transportation (with the locomotives in present use) will be about 1 franc per ton mile. The cost of rail-road has been increased owing to the fact that the materials were delayed until the wet season set in, which made the track laying, ballasting, &c., difficult and expensive, as well as causing additional delays. Large ore shoots have been put up at the mill and "La Colombia" Mine, which with our old ore bins gives above ground an ore storage capacity of 1060 tons. The road at present completed is capable of supplying the mill with ore, and the mines with wood, timber, &c.

"LA COLOMBIA" MINING COMPANY.

Operations on this Company's property have been principally confined to further development of the "Caratal" lode, and perfecting the machinery plant for the economical extraction of ore from this mine. Some development work has also been done on the old "Tigre" lode and No. 7 Concession. The receipts and disbursements for the year 1893 were as follows:—

	Tons ore hoisted.
No. 1 level high grade ..	4,000.000
No. 1 level low grade ..	5,000.00
No. 2 level high grade ..	1,000.00
No. 2 level low grade ..	4,000.00

Total 14,000.00

BULLION: During the bullion year (Dec. 17, 1892, to Dec. 15, 1893) there were crushed in "El Callao" Mill, 4562.18 tons of quartz, which produced 421.88 ounces of gold, a yield of 0.97 ounces per ton; the value of this bullion is estimated at 424,500.48 francs.

DISBURSEMENTS: The expenditure of the calendar year was as follows:—

	Cost, francs.	Cost per ton, francs.
Mining account 14,000.00 tons hoisted ..	580,439.98	41.46
Milling account 4,867.40 tons crushed ..	29,204.46	6.00
Transportation of ore, bullion, taxes, &c. ..	62,685.16	13.00
Operating Costs	672,329.60	60.46
Development work on "Tigre" lode ..	12,831.00	
Development work on No. 7 Concession ..	2,287.50	

Total 687,448.10

The expenses on machinery plant, amounting to 60,680.76 francs, is included in mining account. Value of machinery taken from "El Callao" and "La Union" not included. The small mill tonnage was due to the inadequate wagon transportation. Since the 15th of December, 1893 (the beginning of the bullion year 1894), "El Callao" railroad has furnished transportation, and 30 stamps of "El Callao" Mill have since that date been crushing "Colombia" ore at the rate of 2-50 tons per stamp in 24 hours. The development work has been pushed in every direction. The total drivings for the year amount to 3875.00 feet; a monthly average of 326 feet.

"LA UNION" CONCESSION.

The only development work made on this property during the past year was on the "San Felipe" lode, which is situated 4950 metres south-east of "El Callao" mill. 20 Metro Level Drift North was extended 73 feet when it was discontinued. The lode here has a strike nearly due north, and dips 15 degrees to the east. The quartz which was bunched and low grade gradually pinched as the decomposed formation of the north slope of the hill was entered. On this lode there still remains above the 15 Metro Level some 8000 tons of quartz and surface material that can be worked through an adit, cross cut, or tunnel at a total cost of 20 francs per ton, when the "El Callao" railroad is completed to this point.

The average value of this ground is not less than 1 ounce per ton. By sinking a new shaft in Section 283 (old plan), which would cut the lode at a depth of about 25 metres, some pay ore might be developed, as above this point the 20 metre level shows a strong lode of low grade quartz; the stops above, judging from upper boundary and past reports, gave some fair grade rock.

The coming year some development work will be undertaken on the "Santa Maria" Mine, which is situated 1800 metres to the north. These two mines together have produced from 1883 to February, 1890, 27,603 ounces of gold from 46,465 tons of quartz.

The "San Felipe" Lode has been sunk on to a vertical depth of 34 metres. The "Santa Maria" formation, which is similar to the "Old Tigre" Mine, has been explored to a vertical depth of 78 metres. The ore below the level level in both of these mines contains high grade sulphurets (in "Santa Maria" about 5 per cent.); as no concentration has been made on this ore a large loss has occurred in the milling.

"REMINGTON" MINE.

The old workings of this mine, which is situated 1200 metres east of "El Callao" Mill, has been explored and sampled; about 4000 tons of ore still remain above water level in the old workings that can be extracted at a low cost; this ground will yield about 8 dwts. per ton. Some further development work on this lode will shortly be undertaken. The results of the operations carried on by "El Callao" Company for the year 1893 are as follows:—

Mines.	Tons Mined.	Tons Crushed.	Drivings, Feet.	Gold Produced, Ounces.	Gold Value, Francs.	Total Cost, Francs.
Callao	40,085	40,085	1669	34,537.29	3,315,579.84	2,331,371.15
Colombia	14,000	4,867	3,875	4,212.88	424,500.48	687,448.10
Unlabeled	—	—	73	—	—	2,677.24
Total	54,085	44,952	5,517	38,750.17	3,740,080.32	3,021,496.49

The Railroad expense is included in "El Callao" costs.

CONCLUSION.

The outlook for 1894, as regards ore supply for 60 stamps, is good. "El Callao" Mine will probably furnish sufficient rock for 20 or 30 stamps, while "La Colombia" ore, which can be worked at a total cost of about 46 francs per ton, will supply the remainder of the mill. These two mines, which have heavy pumping expenses, will be given a preference in milling; and as the returns will admit, other properties will be developed. If the ore supply should be notably increased, additional stamps to the mill would be justified. Concentrating machinery will be used on "La Colombia," "Tigre," and "La Union" ores, which will diminish the loss in milling, and give a higher margin of profit.

THE MINERAL WEALTH OF HUELVA.

Being an Illustrated Article on the History of this District from the earliest times.

[Specially written for *The Mining Journal*.]

X.

(Continued from page 401).

Modern Period.

AFTER the Roman evacuation of Spain, more than 1000 years passed without a word being uttered, or a sign being given from which can be deduced a knowledge of the existence of the Huelva mines. In fact, it may safely be maintained that not a simple vestige exists, nor has any substantiating indication ever been found, tending to show that they were ever touched, either by the Visi-Goths or the Moors during their occupations of the district; and it can even be further asserted that, after its recovery by the Spaniards, no less than three centuries elapsed before any attention was paid to its mines.

At last the feverish desire for riches, which spread through the Peninsula after the discovery of America, scented out the old slag heaps, shafts, and galleries, so widely spread over our district, this hunt being, no doubt, further stimulated by the extraordinary success of the fabulous silver mine at Guadalcanal, to the north of Seville, laid open in 1551 or 1555. Philip II. having succeeded to the throne in January, 1556, immediately commissioned a certain Don Francisco Mendoza "to visit, examine, and gather taxes from all mines already discovered in the kingdom," and to give effect to this order Mendoza specially delegated a Charlatanish priest, named Don Diego Delgado, to visit and examine the mines in the neighbourhood of Lalamea la Vieja, now Lalamea la Real.

This Delgado duly reported to his superior on the 15th of August of the same year (1556), and this document may be taken as the first intimation of any operation to re-establish a mining industry in Huelva, since its abandonment by the Romans, 114 centuries previously.

To those who know the Rio Tinto Mines its perusal is interesting. The general topography of the countryside is perfectly recognisable, and certain old caves, which formerly existed, and possibly still exist, are described; the old slag heaps mentioned (their dimensions ridiculously exaggerated, however), the old shafts are not forgotten (a distinction being made between those that served for extraction purposes, and those that served for adit levels), and the impregnation of the streams with salts of iron is also entered upon. From this report of Delgado we know that the principal river leaving the mines was then, as now, the Rio Tinto; that in it grew no fish nor any living thing; "that if a piece of iron were put in its waters in a few days it would be destroyed," and that the townships through which it ran paid their tributes to the Archbishop of Seville in the sulphate of iron collected along its banks during the heat of summer time.

Delgado makes out that he found and extracted some sort of mineral, but as he only dug down "to the depth of his knee," this seems scarcely possible, and finally he comes to the conclusion that the operations of the ancients were confined to the working up of lead, from which they subsequently extracted silver.

How much Delgado erred from the truth in this assumption is now well known, but the report was considered so satisfactory that the King immediately ordered Mendoza to make further explorations in the district of Lalamea; Mendoza, however, being sent in October of the year on some diplomatic service to the Low Countries, was under the necessity of entrusting Delgado with this second mission to Rio Tinto, and as a result, we find Delgado down to the time of his death in the following year (1557) continuing to recommend the "Council of Finances" in the most glowing terms to open up the mines he had discovered. All through these communications Delgado had unfortunately adopted such a tone of pronounced Charlatanism that his effusions came to be looked upon with suspicion, and eventually nothing resulted, although Mendoza himself again examined the neighbourhood a year afterwards.

Such is the story of what is believed to be the first attempt in modern times to open up any mine in the district we are dealing with.

We have advisedly referred to Delgado's operations as an attempt to open up the mines in question, because there exists a document containing references to them previous to that date. This is a royal decree of 1526, issued in favour of Fernando de Lufra, conceding to him a life rent of the Mines of Castillo de las Guardas, situated at the eastern extremity of the Huelva mining district. Nothing is known to have resulted from this concession.

In 1563 claim was made by a lady called Catalina Mendez for a mining concession in the township of Alosno, where the celebrated mines of Tharsis now are.

In 1570 a similar claim was made by Enrique Perneque, a German, for a concession in the township of Paimogo, on the borders of the River Chanza, which at this part of its course serves as the boundary between Spain and Portugal. Now, the site of this concession, easily recognisable from its description, is removed only a short distance from the Santo Domingo Miner, in Portugal, so it is absolutely certain that they had been discovered at that time, for being much more conspicuous, attention would have been called to them long before the other insignificant properties in the neighbourhood.

From the foregoing it is to be deduced that, although the mines of Huelva may have called some attention during the first half of the 16th century, yet it was not till the second half of that century was entered on that they were really well defined, and their existence thoroughly known.

New legislation at this period seems to have favoured the vocation of mine seekers, and concessions continued to be asked for from one end of the district to the other, the surroundings of the present Tharsis Mines being very much fancied.

Absolutely no result seems to have been derived from the operations then carried on, and the mineral masses, if ever found, must have been considered as valueless.

(To be continued.)

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CONTENTS

Of this Number of "The Mining Journal, Railway and
Commercial Gazette," April 28, 1894.

NEW PATENTS ...	449
CONTRACTS OPEN ...	449
OUR INQUIRY COLUMN ...	449
MECHANICAL ENGINEERING, &c. A New Gas Exhauster ...	450
MINING IN MASHONALAND ...	450
SPECIAL CORRESPONDENCE: Colonial and Foreign. Mining in Asturias (Spain) ...	451
MINING IN MEXICO ...	451
REASONABLE GEOLOGY ...	451
THE METALLURGY OF LEAD ...	452
MINING IN CORNWALL AND DEVON ...	453
MEETINGS OF MINING COMPANIES— Mysoore-Wynad Consolidated Gold Mining Company (Limited) ... Mysoore West Gold; Panuclillo Copper; Wheal Bassett ... Tharisa Sulphur and Copper; Scottish Australian; Rio Tinto ...	453 454 455
MISCELLANEOUS MEETINGS National Bank of India ...	456
REVIEWS ...	456
PUBLICATIONS RECEIVED ...	457
EL CALLAO GOLD MINING COMPANY ...	457
THE MINERAL WEALTH OF HUELVA ...	457
LEADING ARTICLES— Home and Colonial Mining; Position and Prospects of the Coal Trade ... Tank Block Prospects ...	458 459
NOTES AND COMMENTS ...	459
OUR CITY ARTICLE ...	460
LATEST FROM THE MINES: Cables and Telegrams ...	460
COMPANIES AND THEIR DOINGS ...	461
FORTHCOMING MEETINGS ...	461
SIDE LIGHTS ON THE LAW ...	461
TIN TICKETING ...	461
THE METAL MARKETS— The London Metal Market ...	461 462-463
"THE MINING JOURNAL" SHARE LIST ...	462-463
THE EDITOR'S LETTER BOX ...	463
GEOLOGY AND MINERALOGY OF SHASTA COUNTY ...	463
REPORTS FROM THE MINES ...	464
BENDIGO GOLD FIELD ...	466
PROVINCIAL SHARE MARKETS ...	468
ADVERTISEMENTS—(See Index to Trade Advertisements, p. 445).	

LONDON: APRIL 28, 1894.

HOME AND COLONIAL MINING.

EVERYTHING points at the present moment to a revival
of activity in most branches of metalliferous mining. The
conditions of the industry are distinctly favourable. In
the working of auriferous and other properties the different
companies have profited from experience in the past to secure
the best results at a minimum of cost, and by the aid of new
processes of gold extraction it is now possible to make a profit
out of mines that a couple of years ago would have been aban-
doned as unproductive. At the same time, the interests of
shareholders are safeguarded more effectually than hitherto, as
the intelligent part which holders of scrip are playing in the
management of the different properties circumscribes the oppor-
tunities of shady promoters to take an unfair advantage of
them. But while the conditions of mining are certainly more
favourable to investors than was the case during the Transvaal
collapse, there is yet a great deal to be done before the public
can consider itself as perfectly safe. The existing laws regulating
company promotion afford too many facilities for dishonest

practices to ensure complete confidence among investors, and
until this confidence is general it is not likely that
the mining industry will occupy the position which
is justified by its vast extent and by its importance as an invest-
ment. Nevertheless, the circumspection which is being shown in
everything appertaining to mining makes it exceedingly difficult
for company promoters to launch concerns that have little or no
prospect of success. In thus discriminating between good and
bad mining ventures the merits of the promising ones are, of
course, brought into stronger relief, and while the public may
fight shy of new companies that have not yet afforded any
proof of stability, it will be more than ever willing to place money
in concerns that give something like a remunerative return.
Though this feeling is a praiseworthy one it is, unfortunately,
somewhat unfavourable to active enterprise, and very little
capital is forthcoming for the opening up of new fields that may
be quite as rich as those already in existence. Before capital
can be diverted out of its present narrow channels, it is essen-
tial that some reform should take place in the methods of com-
pany promotion.

If the public has not lately shown any readiness to invest
money in mining concerns, it is only because it has not
sufficient confidence in the management of such pro-
perties, but when the public is convinced that it
can secure profitable returns without undue risks, it is
natural to expect that an abundance of capital will be forth-
coming. The development of gold mining on the Rand is a
sufficient proof that the industry can be conducted successfully
upon thoroughly systematic and business-like lines. And what
has been done on the Rand is likely to be done elsewhere. The
discoveries of gold in Western Australia have opened up possi-
bilities quite as great as those of the Transvaal, and if the South
African methods are adopted in the Australian colony the new
gold field should meet with a great deal of support from English
investors. It seems, however, that much will have to be done
before the Western Australian gold deposits can be worked in
an economical and systematic manner. The absence of water is
apparently the most serious difficulty, though it ought not to
be an insuperable one, and the providing of improved transport
facilities will necessitate a great expenditure of capital before
the newly found treasures can be turned to account. In other
of the Australian Colonies the recent discoveries have given an
active impulse to further prospecting, and it is not at all impro-
bable that as the result of the researches now being made, we
may hear before long of the existence of new gold deposits
that may rival those of the Transvaal. In South
Africa itself it seems that the limit of gold de-
velopment is far from being reached. Very encouraging
reports continue to be received of the presence of rich reefs of
gold in Matabeleland, and this new possession seems destined to
play a very important part in the supply of the world's gold
requirements. In India, the gold mining companies have
hitherto had to contend with the supine attitude of the Govern-
ment, which has shown very little desire to favour the develop-
ment of industries in the dependency. Notwithstanding this,
the shareholders in these concerns have had every reason to be
satisfied with the profits secured upon Indian gold mining, and
the returns are likely to be increased now that so much has
been done towards reducing working expenses, and by the econ-
omies that are being effected by the adoption of the MacARTHUR-
FORREST process for the treatment of the tailings. In other of
our colonies, notably in Canada, new discoveries of gold continue
to be made, but it is hardly creditable to British enterprise that
these Canadian deposits are immediately acquired and worked
by United States capitalists.

**POSITION AND PROSPECTS OF THE
COAL TRADE.**

THE enormous capital invested in coal mining and in the
industries dependent upon the output of coal at a
moderate price, the general causes of the widespread
interest taken by the public in the doings of the colliers and
their leaders. It would, perhaps, be hardly respectful to liken
the men to a flock of sheep, although it is evident that they
follow their leaders almost as blindly and ignorantly, and, utterly
irrespective of the state of trade, support anyone who will
promise them the most wages, or, if a decrease is inevitable, then
the minimum reduction. Such seems to be the position occupied
by Mr. BAILEY at this moment. This gentleman, indeed, is far
more popular among all the districts than is generally supposed,
as may be inferred from the half-hearted manner in which the
men's representatives disavow his attack upon Lord SHAFTES-
BURY. The popularity of Mr. PICKARD as a leader seems to be waning
even in Yorkshire, and this, coupled with the increasing popu-
larity of Mr. BAILEY, almost justifies the assumption that this
latter is making a bid for the position formerly occupied by
the former. This is more particularly the case with the men
of West Yorkshire, who point to the fact that whereas in the
Barnsley district, which Mr. PICKARD directly represents, the
collieries are working about five days per week, and in some
cases, as at the Denaby Main Pits, six days, whereas in the West
Riding and Chesterfield districts the pits are barely kept going
two and a-half hours per day. The position that the men take
is that Mr. PICKARD ought to equalise matters, or, at any rate,
reduce the hours and the output in the Barnsley district, even
if he cannot increase the work in West Yorkshire and North
Derbyshire. There is, of course, a good and substantial reason for
the activity of the collieries around Sheffield, Barnsley, and Don-
caster, as compared with those of the other districts we have men-
tioned, and one which is utterly independent of any combination of
labour or manoeuvre of capital. We refer to the fine quality of
the South Yorkshire steam coal, which commands a very high
price on account not only of its hardness and durability, but

also of its freedom from sulphur, which renders it invaluable for steel making.

Turning now to the state of trade generally, it seems obvious that Lord SHAND must award the coalowners some concession as regards the rate of wages. It is, of course, impossible to foresee what reduction he may consider necessary, but it will, we think, be readily granted that he will have the fullest opportunity of coming to a just conclusion. Should the miners refuse to accept and carry out the decision to be arrived at by Lord SHAND, they would sacrifice every shred of public sympathy, and so deprive themselves of a valuable means of support if another struggle broke out between them and the coalowners. To this must be coupled the facts that the funds of their Unions are exhausted, and that individual men are in many cases without means, so that the likelihood of a serious strike seems remote.

Different districts may, however, take different views of the position, and so give rise to local disturbances, but, for the reasons already given, we do not think that there is much probability of a general strike in the immediate future. The Board of Conciliation has really resolved itself into one of arbitration, a result which was not anticipated when the miners agreed to submit to it; and this would lead us to anticipate the breaking-up of the Board at the expiration of the year for which it was formed in November next. The leaders of the men have boasted so loudly of the immense power of the Federation that it will be difficult for them to climb down to a less exaggerated, but more reasonable, view of its importance. The mischief, however, has been done as far as inflating the ideas of the men is concerned, and so it seems to us that, although they may be driven by circumstances to agree to a reduction this spring, there will be an agitation in favour of reverting to the present standard of wages in November. The masters would experience some difficulty in resisting this in mid-winter, unless trade, instead of fulfilling our hopes by improving, should still continue in its present depressed condition.

The situation is further complicated by the largely increased outputs at many of the new collieries. As an example, we may take three pits in the South Yorkshire district—viz., Cadeby, Hickleton, and Sir JOHN BROWN'S new pit, which will before the end of this year have an increased output per day of from 10,000 to 12,000 tons. This is a sample only of what is going on in a similar degree in the other districts. The modern collieries, with all the most recent appliances for economical working, can be worked so cheaply that the older ones, especially those drawing from long distances from the pit bottom, cannot compete with them, and must either put down new shafts and new machinery or stop working. Another effect of these enormous outputs of coal will inevitably be in the direction of keeping prices down, and they will also give rise to friction between masters and men in the following way:—In order to be worked economically, these large new pits must be kept going regularly, and not intermittently only three or four days a week. But full employment does not suit the new Unionism; the desire of the miner on this point is to work about four days per week, and be paid for so doing the amount he formerly earned in six. The whole problem is surrounded with difficulties, which cannot be overcome without the aid of wise and judicious concessions on both sides. We have endeavoured to enlighten our readers upon some of the points in question, and our sincere hope is that a just decision may be arrived at without an appeal to a struggle ruinous alike to both parties, and especially so to the welfare of the nation at large.

TANK BLOCK PROSPECTS.

THE shareholders of the Mysore-Wynad and the Mysore West Companies have decided, by an overwhelming majority, to reconstruct, and to make another effort to ascertain the value of the Tank Block portion of their property. These two companies are so inseparably associated that they must act in unison. What one does the other must do, or else neither of them would be able to operate with success. Under these circumstances, the wisest course to pursue would seem to be amalgamation. But this is not possible, as Mr. HERRING forcibly pointed out. The Mysore West Company would, if such a suggestion were made, rightly claim the possession of a valuable water right, and a greater number of shares of the Mysore-Wynad. In short, although their interests are absolutely bound up together, and although their hopes are based upon one section of the land, the one company possesses more valuable assets than the other, and this fact, of course, renders amalgamation unworkable. After all, the only advantage which would result from amalgamation—for to all intents and purposes the two companies work in partnership—would be economy of working. This is one of the things on which we felt sure shareholders would insist. Not a halfpenny must be spent extravagantly. The directors, evidently anticipating this feeling, have met it in a manner which leaves no loophole for adverse criticism. In future there are to be only three directors, which board will manage both companies. It is provided that they shall receive from each £200 a year, or a total of £400 per annum. By such an arrangement we are told there will be a yearly saving of £1000, which, of course, is considerable, and one deserving of every recognition. In addition to this, the directors will receive remuneration at the rate of 2½ per cent. on the dividends paid to the shareholders. This is reasonable and fair. The shareholders of the respective companies are quite satisfied with such an arrangement. We should like to see it adopted more extensively than it is. It would then remove a sore grievance, and a forcible, and oftentimes just cause of dissatisfaction. Directors of mining companies should do it for their own comfort, for it would remove from their path the many thorns which make their life so grievous and painful. The principal consideration with the shareholders of these two companies is, of course, the value of the Tank Block,

and whether it contains sufficient wealth to recoup them for this additional outlay. After all is said and done, this remains doubtful. We can only speculate and argue from existing circumstances. It must be admitted that evidence is in favour of this part of the property containing gold. The precious metal is found on each side of it, and it would seem strange if, to quote the words of Mr. HERRING, Nature is going to be very unkind to them; will stop short of their mine; pick the lode up again on the other side, and then go on. "My common-sense seems to tell me that such is not the case, but that the gold is there, and in good payable quantities." Such is the conviction of a gentleman who has a large interest at stake in both companies, who is the principal debenture-holder, and who has power to foreclose and wreck the mine if he thought proper. But very few will hesitate to say there is gold in this particular place. In fact, the existence of it has been proved. But its value and payableness have not been so forcibly demonstrated. That is a problem for the future. However, the shareholders seem quite satisfied it is worthy of a further trial. They have consented unanimously in the one case, and with one dissentient in the other, to reconstruct and make a worthy attempt. In this we do not for a moment think they are acting against their interests. They have spent so much; they have had to exercise such prolonged patience, that it would be ridiculous not to speculate another half-crown. We hope—and that is really all one can do in the absence of complete assurance—that this effort will be final, conclusive, and successful. They really deserve great reward for their long waiting and heavy expenditure, and it is to be hoped that is now not far from their grasp.

NOTES AND COMMENTS.

IT will be seen that we have devoted one of our leading articles this week to a review of the present position of the coal trade, a subject which is now, in more aspects than one, attracting general attention. Not an insignificant portion of the community anticipate another crisis, such as was witnessed last spring and summer, but we have endeavoured to enumerate some of the obstacles which stand in the way of this, and to argue its improbability. Another aspect of the question, which has been debated for a length of time from one end of the Kingdom to the other, has this week again come prominently forward, and has given rise to not a little controversy, not only in Parliament, but in the Press and in public and private circles. We mean, of course, the eight hours' question, which, notwithstanding its success in the House this week, has not by any means met with a final solution. It is very doubtful whether the Bill will become law. It will yet have to go through committee, and then be relegated to the House of Lords. If the miners, for whose benefit it is supposed to legislate, were unanimously in its favour, the public might be disposed to give it more universal support, but in the face of opposition on the part of those directly interested, we can scarcely expect the outside community to aid in its success. To attempt to enumerate its benefits or evils, if passed into law, is difficult. Practice, alone, can prove or disprove its efficacy. But, as we have already said, we doubt that it will be put into practice, at least for a while. In the meantime the advocates of the Bill are jubilant over its success.

No one will be inclined to envy the position of the shareholders in the Langlaagte Block B Deep Level Company. Micawber-like, they are waiting for something to turn up, and, preferably, a purchaser. Their efforts have been directed during the past six months to a policy of "nursing their claims," and to a patient—or, rather, impatient—waiting for some one to relieve them of their responsibility. As deep level properties are attracting attention, they will likely not have to wait an inordinate length of time. But, of course, "one never knows," as a superficial philosopher has, in a happy moment, profoundly and truthfully observed. Much depends upon the development of the other deep level properties in the neighbourhood. A half-yearly meeting of the company was held last month in South Africa, when the shareholders moved that it be an instruction to the board to invite tenders for the right to purchase the company's property, or consider the reconstruction of the company. The latter was formed in March, 1889, and owns fifty-five claims on the Farm Langlaagte, Main Reef, the authorised capital being £75,000, in 75,000 fully-paid shares of £1 each. Last September we were told the property was being nursed pending such time as some scheme for working it may be resolved upon. Apparently, such a scheme has not yet been formulated, except it be the instruction already referred to.

Out of the ruins of the Panulillo Copper Company a new company is, phoenix-like, to rise into activity. The Central Chili Copper Company, as the new concern is to be called, starts upon its career with a capital of £280,000, in £1 shares, 30,000 of which are to be called 6 per cent. priority shares, while the remaining 250,000 will be ordinary shares. Before embarking upon the scheme, it is but natural that the shareholders should enquire what advantage the new company is going to have over the old one. The prospectus, which is at present private property, answers this anticipated enquiry by saying that the directors will aim at increasing the production of the smelting works to a minimum of 2,000 tons of fine copper per annum, while some considerable reductions in the general charges will effect an appreciable decrease in the costs of working. One matter the Chairman mentioned at the recent extraordinary general meeting bears weightily upon any estimate shareholders may care to form of the future. Protracted negotiations have initiated the possibility of a satisfactory lowering of the railway rates. It is easy to see how important an advantage will, in that event, be secured to the company.

SEEMING that for some time past varying information has reached us concerning the operations at the New Rietfontein Mine, it is interesting to read what our South African contemporary has to say, the information it imparts having been gathered on the spot. The date of the paper is March 31st. At that time 25 stamps were kept running for full time on good rock, an extra five stamps being kept in reserve to obviate any loss of time through stoppages. The compressor plant was also running steadily, and eight drills were kept at work in the mine, the limited number of points of attack available preventing the employment of any larger number. Considerable use, too, was being made of compressed air to operate the pumps, the distance over which the mine workings are spread, and consequent difficulty of economic employment of steam, rendering this method of conveying power unusually advantageous. The ore sent to the mills ran from 15 to 16 dwts. over the plates. It is impossible, the writer goes on to say, until development has been carried further, to speak definitely as to the future prospects of the company, beyond stating that indications are favourable, and that partly as a consequence of the size of the property, and the richness of its reefs at certain points, its future possibilities are enormous. Both at the eastern and western workings development in depth would seem to show that the formation becomes more regular, and that the dip of the strata, similarly as in the case of the majority of main reef mines, becomes much flatter.

In other words, there would seem every chance that as development proceeds it will be found that the violent upheaval to which the beds on surface have been subjected, and which has caused their fracture and, at certain points, displacement, has not affected the lower portions of the deposits to at all the same extent, and that, consequently, as soon as the workings have passed below the zone of the faults, far more regular country will be met with. The condition is sufficiently common to be probable, and is so farborne out by facts. More work must, however, be done before a final opinion can be pronounced. The chief difficulties with which the energetic manager, Mr. Doveton, has at present to contend, and particularly in the western section, are the limited number of points of attack available and the hardness of the rock. In consequence, only a slow rate of progress can be made, and some time must yet elapse before the required evidence can be forthcoming. Work has recently been restarted at No. 4 shaft, half way between the battery and the eastern mine, where the reefs when cut on surface by the tramway showed excellent value. The country is, however, considerably broken at this point, and, at any rate in the neighbourhood of the surface it is impossible to extract any large quantity of ore.

OUR Australian contemporary records the fact that the gold mining boom is becoming more and more pronounced every week, and is extending to pretty well all the colonies. Western Australia is, of course, the great centre of attraction, but in various parts of Victoria, New South Wales, and Queensland discoveries are being made, and developments taking place, which are calculated to divide with the golden West the attention of those afflicted with the gold fever. Perhaps the most important rush in the eastern colonies is that reported from Wyalong, in New South Wales, where what promises to be an extensive and highly payable field is now being opened up; and as there is also a very good prospect of a great revival on the old Hill End field, the gold mining industry may be said to have made an exceptionally good start for the new year in the mother colony. In Victoria the recently reported discoveries have been both numerous and important, and there is every reason for looking forward to a highly prosperous year. In Queensland the gold mining industry continues in a healthy condition with advancing returns from some of the principal fields, and with good reports from new finds; while the news from New Zealand, Tasmania, and South Australia is not by any means destitute of encouraging features. Notwithstanding, therefore, the vast numbers of men who are going out west, and the large amount of attention being devoted to the Coolgardie and other West Australian mines, things are looking up for gold all round.

A WELL-KNOWN miner, who has spent 24 years following the reefing and alluvial fields of North Queensland, has been publishing his experiences at Coolgardie in the columns of the *North Queensland Register*. At Bailey's Reward Claim, he says, there is a main shaft down to a depth of 240 feet. At this depth the water is not heavy—about 500 gallons of salt water in the 24 hours. At a point about 80 feet from the shaft the rich shoot is reached, the stone in which differs altogether from the main lode. He says it would be hard to estimate the value of the stone in this rich leader. The lowest estimate would be 100 ounces to the ton. The main reef shows all the appearances of a permanent lode. He, however, does not speak in sanguine terms of the country outside Bailey's Reward Claims. He says:—"I can say, without fear of contradiction, that there are very few reefs outside of Bailey's Reward Claim where milling ore is to be found. Hundreds of leases are taken up where the colour cannot be found, and only some few can show colours; and I do not think this field will ever reward the miner for his labour or the capitalist for his expenditure. The pestle and mortar will take the place of the stamp battery on Coolgardie. If the reefs were fairly payable there would be no show for miners, for the whole country side is locked up by boomers, who, had they devoted half the time and energy to prospecting that they have to floating, would have thoroughly proved their ground; this they are leaving to other people."

SOME very wild talk is being uttered in certain quarters about the approaching shutting down of the Witwatersrandt gold mines in consequence of the latest developments of the dynamite question. It is now definitely understood that Nobel's Trust, who were relied upon to assist the mining industry in

combating the Government monopoly, have allied themselves with that monopoly. "Free trade in dynamite" seems, therefore, a farther cry than ever, and, failing the importation of the explosive from the United States, the extreme measure of a cessation of output which would bring President Kruger to his knees, is threatened. However the dynamite question may settle itself, this cutting-off of one's nose to spite one's face seems a very unlikely expedient for the gold companies to adopt. They are too desperately in earnest about increasing the monthly product to leave off work for the sake of frightening the Boers. Like sensible men they will probably content themselves with getting the best terms possible from the Government, and with utilising other explosives besides dynamite for the blasting of their rock. Roburite, for instance, has come a good deal to the fore on the Rand of late. In the meantime, the companies may take comfort from Rider Haggard's prophecy that in another ten years the Transvaal will be under British rule again.

OUR CITY ARTICLE.

FRIDAY EVENING.

THE MINING MARKET.

An unsteady week.—A general shaking out of weak holders.—Further realisation of profits.

A CONTINUATION of influences has tended to make the Mining Market extremely unsteady during the week. The general tone, however, has remained a hopeful one, and strong undercurrents of firmness have set in at the close of the week, justifying the hope of an early return to the strength exhibited a fortnight ago. In view of the large extent to which weak holders have been shaken out, the comparatively unimportant nature of the declines which have taken place is a most hopeful sign. The improvement perceptible during the last few days might have been predicted owing to the ease with which the settlement was effected, and the insignificance of the contingencies ruling. During the progress of the arrangement of account both markets were considerably jerky. Small rallies and relapses were continually taking place both in the Randt shares and the miscellaneous department. By the middle of the week, however, a hopeful tendency reasserted itself, and the beneficial effects of the shake-out commenced to tell. Chartered especially exhibited an improvement upon their previous vacillations. No great display of activity was manifested, but the prices remained firm. Kleinfonteins hardened on the news that the company had started operations with the new 50-stamp mill and the cyanide plant of 5000 tons capacity, and that there were 35,000 tons of payable ore in sight. During the closing days of the week business was considerably restricted, the attention being directed towards the final adjustment. The only disturbing influence was an occasional rumour or two, which ended, however, without any result worth mentioning. There were no serious declines recorded, and some small but steady gains testified to a good undercurrent. Altogether, the outlook may be described as very satisfactory, and it is evident that the market is in a healthy state.

British Mines.

The unfortunate run of ground in Dolcoath shaft has been the sensation of the week, and has caused a great shock to the Cornish market. At present it is impossible to say its extent, or how long it will be before the engine can again get to work. Everything is being done that can be, but, in the meantime, the water is slowly rising. The shares have fallen from 78½ to 73½, but, in the present uncertainty, it is difficult to deal. Tin is firmer, and but for the accident referred to above, there would have been a good demand for shares generally. Carn Brea have been dull since the meeting, sellers predominating. A steady business has been done in Killifreth at 33. South Crofty are firm at 34. The bottom end has improved since the meeting. A good many South Frances have changed hands from 14 to 14½. Captain Josiah Thomas has inspected the mine, and given a favourable report of the prospects. West Kitty are dull, in anticipation of the dividend being passed this time. Polberron have been inquired for at 22s. 6d., and Wheal Grenville are scarce at 16.—Risen: Killifreth, 2s. 6d.; South Crofty, 5s.; South Frances, 2s. 6d.; and Wheal Grenville, 10s.—Fallen: Carn Brea, 5s.; Dolcoath, £6 10s.; and West Kitty, 2s. 6d.

South African Shares.

Early in the week the South African Market was somewhat quieter, owing to the preparations for Tuesday's settlement. A steady undercurrent, however, continued throughout Monday, and was especially noticeable in gold shares. Buying occasioned some small advances in the Witwatersrand shares. Durban advanced to 5½, Primroses to 4½, Geldenhuis Deep to 3½ buyers, and Nigels to 3, while some other slight improvements were noticeable. Chartered and Becha, which on Saturday rallied considerably, relapsed to some extent. Similar relapses were shown in Ferreira, Randfontein, and others. An encouraging report from the manager of the Sutherland Reef created a demand for the shares; but a disposition to snatch profits caused a relapse in Virginia. Among gold shares City and Suburban gained ½ at 13½, and a recovery of ½ was also registered at Geldenhuis Deep, the closing price being 3½. United Roodepoort were 3-32 higher at 2 5-32, and George and May advanced 1s. 6d. to 24s. 6d.; while Kleinfontein left off at 1½, New Chimes at 1½, New Primrose at 4 15-32, Nigels at 3, and Wemmer at 4½, the rally in each of these amounting to ½. Other improvements resulted in the cases of Wolhuter, Durban-Roodepoort, Langlaagte, New Crosses, and New Heriot, and Transvaal Gold were also harder at 40s. 6d. On the contrary, Ferreira receded ½ to 7½, and Simmer and Jack and United Langlaagte were also rather lower. Among the lower priced shares Paarl Central gave way ½ to 17s. 6d., while East Randt left off 9d. better at 14s. 6d., and some buying of Sutherland Reef raised the price to 4s. 9d. bid. Tuesday's carry-over in the South African market passed off without any serious hitch. Easier rates afforded pretty clear evidence that liquidation to a large extent had affected the bull account. The advances generally recorded some time ago had not only been covered by reactions to a similar extent, but further sellings brought prices even lower. Randt shares, however, did not upon the making-up show any serious declines. Crown Reefs, owing to several exceptional influences, notably the weakness of a Paris bull of a large block, showed the most serious decline, amounting to ½. Other declines were noticeable in Durban to the extent of ½, Ferreira ½, Geldenhuis ½, Glencairn, 2s., Jubilee ½, Jumpers and Langlaagte about ½, Ryn ½, Wemmer ½, and Wolhuter about ½, Nigels, Rand Mines ½, Spes Bona ½. Slight improvements were, on the other hand, registered in City and Suburban, Gel-

denhuis Deep, Henry Nourse, Primrose, Randfontein, and Worcester. Meyer and Charlton, Chimes, Rietfontein, Simmer and Jack, South Simmer, and Stanhope made up at nearly the same prices. Chartered showed a fall of about 3s. De Beers made up ½ lower, Jagers ½, Exploring ½, Consolidated Goldfields ½, and Oceana ½ less. Little business was done upon the new account. Chartered rallied and relapsed, closing a shade lower upon the day. De Beers rallied to 16½. Jagers, on the other hand, relapsed ½. Among Randt gold shares there were improvements in Simmers, Kleinfonteins, Randfonteins, and Villages, while the market was weak for Langlaagtes, Spes Bona, Geldenhuis Deep, Sheba, and Transvaal Gold. Wednesday opened quietly in the South African market, but towards the close of the day a better tone was manifested. Chartered were especially strong, and rose to 35s. 3d. inside, while in the street there was a further advance to 35s. 9d. Becha. were stronger at 31s. 6d. Land shares generally were characterised by a better tone. Oceana improved to 2½, Exploring to 5½, and some of the lower-priced shares were actively dealt in. The chief feature in Randt shares was the recovery of Crown to 9½. A good deal of attention was directed to Champ d'Or and Kleinfonteins, but Modderfonteins were flat. Meyer and Charlton were again in demand, and rose to 5½. Primroses were easier, while relapses occurred in Van Ryns and Spes Bona. Slight declines took place in Aurora West, Geldenhuis Main Reef, Luipaards Vlei, Glencairn, Heriot, and Nigels. On the other hand, Block B, Randfontein, United Roodepoort, and Randt mines had a better tone. Diamonds attracted but little attention. De Beers remained unchanged, but Jagers were a shade better. Business was restricted on Thursday, owing to the final stage of the settlement. There were not, however, any serious declines, and it was obvious that there was a good steady undercurrent beneath the surface. Chartered and Bechuanaland Exploration were in good demand early in the day, the former rising to 35s. 10½d., and the latter to 32s. Later in the day the price eased off, but the market still showed no weakness. Gold shares were dull, and Wolhuters, Glencairns, Randfonteins, Durban, Pioneers, Spes Bona, and Knights relapsed. Jumpers, Primroses, and Goldfields Deep were easier. Langlaagte kept firm, closing 4½, buyers, ex the dividend of 4s. Wolhuters improved to 2½ buyers, and Shebas again hardened. For Transvaal Gold there was a strong market, advancing to 2½, ½. Consolidated Goldfields maintained a firm tone at 2½ buyers and the debentures were unchanged. Diamonds received little attention, but were again harder, De Beers improving to 16½ and Jagers to 16½. Throughout to-day this market has continued steady, there being few changes of any importance. Amongst Rand shares Chartered were offered at from 34s. to 36s., and closed about a shilling up on the week. Gold Fields of South Africa have also had a good market. Risen: Afrikaander, 2s. 6d.; Bechuanaland, 1s.; Buffelsdorp, 2s.; Champ d'Or, 1s. 3d.; Chartered, 1s.; Chartered Gold Fields, 1s. 3d.; City and Suburban (allowing for dividend), 2s. 6d.; Crown Reef, 5s.; De Beers, 7s. 6d.; East Rand, 1s.; Exploring, 5s.; George and May, 2s. 6d.; Kleinfontein, 2s. 6d.; New Crosses, 1s. 3d.; New Jagers, 5s.; Nigels (allowing for dividend), 9d.; Robinson, 2s. 6d.; Simmer and Jack, 7s. 6d.; South African Exploration, 5s.; Transvaal Exploration, 1s.; United Roodepoort, 1s. 3d.; Village Main, 2s. 6d.; Zambesia, 2s. 6d.; Alexandra Estate, 6d.; Aurora, 1s.; Aurora West, 3s. 9d.; Central African Zoutspannersberg, 9d.; Frank Johnson, 2s. 6d.; Geldenhuis Main Reef, 1s. 6d.; Glencairn, 1s.; Grahamstown, 6d.; Johannesburg Estate, 1s.; Johannesburg Pioneer, Johannesburg Trans. 1s.; Johannesburg Waterworks, 1s. 6d.; Jubilee, 2s. 6d.; Jumpers, 2s. 6d.; Klerksdorp, 6d.; Luipaard's Vein, 6d.; May, 6d.; May Deep, 1s. 6d.; Mozambique, 2s. 6d.; Moodies, 6d.; New Primrose, 3s. 9d.; New Virginia, 9d.; Ocean Development, 1s. 3d.; Randfontein, 6d.; Salisbury, 2s. 6d.; South African Gold Trust, 6d.; South African Trust and Finance, 6d.; Stanhope, 2s. 6d.; Transvaal Estates, 6d.; Transvaal Lands, 6d.; United Joy, 1s. 3d.; Van Ryn, 1s. 3d.; Knights, 6d.; Wolhuter, 2s. 6d.

Indian and Miscellaneous Shares.

The miscellaneous market opened this week in a state of great uncertainty. Changes occurred quite out of proportion to the small amount of business done. Most of the transactions were undertaken with a view to the impending account, and the stability of the shares was attested by the small extent to which quotations were influenced by the selling. Victory receded 2s., and left off at only 8s., and St. John del Rey were 1s. lower at 23s., while the depression spread among such low-priced shares as Day Dawn P.C., Kempinkote, Palmarejo, Kabonga, Australian Broken Hill, Glenrock, and Burma Ruby. Mount Morgan and Broken Hill Proprietary, however, each rose ½, while New Queen were the turn harder. Indian shares were somewhat lower, although Mysore Gold recovered ½. Gold Fields of Mysore receded 6d., to 22s. 6d., Balaghat were worse to a similar extent at 8s. 6d., and Nine Reefs and Mysore Reef both suffered in a small degree. Rio Tinto shares were a trifle weaker at 15½. There was little doing in this department on Tuesday. Business for the new account was necessarily restricted, owing to the carry-over being much heavier than was expected. Idahos prevented the market from being absolutely featureless by a spurt, which left them 3d. up at the close. Caratals continued dull, and Harquashals were depressed, the mining report for March being considered somewhat unsatisfactory. Ooregums and Gold Fields of Mysore were easier; while Nundydroogs and Balaghat were better. Mount Morgan and New Queen improved. Bayley's Reward were again lower. Don Pedro and Del Rey were harder; Gravel Gold easier. There was some display of activity in this market throughout Wednesday, and prices were decidedly firmer. Better quotations for silver induced a more active demand for Broken Hill Props. Among Indian shares Mysore Gold were in some demand, and rose ½ to 3½, and Victory again rallied 1s. to 9s.; while Mysore Reefs were 6d. down at 11s., and De Lamar improved 6d., leaving off at 22s. 6d. Copper shares exhibited no alteration. The miscellaneous market continued to exhibit strength on Thursday. Improvements were pretty generally registered throughout the market, more especially in the lower priced shares. A recovery of ½ took place in Mount Morgan, to 2½, St. John del Rey were about 1s. higher at 24s. 4½d., Plumas Eureka and Sierra Buttes recovered the dividend. Victory rose 6d. to 9s. 6d., and Day Dawn and Glenrock were each a shade harder. Don Pedro, on the other hand, fell 6d. to 3s. In the miscellaneous market Australian shares have been pretty active to-day, New Queen being especially in request. Day Dawns improved to 6s. 9d. For the lower priced Australian shares the enquiries were very persistent, advances being pretty generally recorded. The principal feature in the Indian market was the demand for Mysore Gold, which closed somewhat firmer.—Risen: Aladdin's Lamp, 1s. 3d.; Brilliant Block, 1s. 3d.; Colombian Hydraulic, 6d.; Copiapo, 1s. 3d.; Day Dawn, 2s. 3d.; De Lamar (allowing for dividend), 1s. 6d.; Gold Fields of Mysore, 1s.; Linares (allowing for dividend), 1s.; Mount Morgan, 3s. 9d.; Mysore, 1s. 3d.; Ooregum Preference (allowing for dividend), 1s. 6d.; St. John del Rey, 1s.—Fallen: Bayley's Reward, 3s. 9d.; Brilliant St. George, 1s.; Day Dawn P.C., 6d.; Don Pedro, 1s.; Elkhorn, 6d.; Gravel, 1s.; Harquashals, 3s.; Mason, 2s. 6d.; Mills Day Dawn, 1s. 3d.; Mysore Reefs, 1s.; Mysore West, 6d.;

New Guston, 1s.; Nundydroog, 1s. 3d.; Quebrada, 2s. 6d.; Rio Tinto, 2s. 6d.; Tharsis, 5s.; Victory, 2s. 6d.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

AFRIKANDER.—A cablegram has been received from the Chairman, who is now at Johannesburg, stating that he has purchased the cyanide plant, machinery, and buildings on satisfactory terms, and that the work of the mine will be resumed immediately.

AUSTRALASIAN MINING.—The directors have received a cable from the mine, dated April 25, giving result of the past weeks crushing as follows:—"24 days 410 tons, 182 ounces, £630 value; £50 profit."

BAYLEY'S REWARD.—The following cable has been received from Melbourne by the London Office 25th inst.:—"Yield last week 500 ounces gold; 2 stampers; mine looking well throughout."

CROWN REEF.—Copy of cablegram received from Johannesburg, April 21:—"Results for March, 1894: Number of days working 120 stamps, 28 days 18 hours; tons crushed by mills, 16,911; tons of tailings and concentrates treated by cyanide works, 17,492; yield in smelted gold from mills, 7085 ounces; yield in smelted gold from cyanide works, 3650 ounces = 10,735 ounces.—Working expenditure and revenue: Mining, transport, milling, cyanide, general charges, maintenance and mine development redemption, £25,908 5s.; profit for month, £9765 = £35,673 5s.; value of the production of the mill, £24,233 3s. 9d.; 3650 ounces from tailings and concentrates, £11,440 1s. 3d. = £35,673 5s.; expenditure on account of capital, £11,107; revenue per ton, crushed, £2 2s. 2-27d.; cost per ton, £1 10s. 7-68d.; profit per ton, 11s. 6-59d."

COLOMBIAN HYDRAULIC.—The directors have received the following cablegram of the result of run No. 193:—"We have cleaned up after a run of 35 days, during which time we have washed 720 hours. The gross returns are £1850; the net profit is £1000."

DRAKEWALLS.—During the week the engine shaft has been sunk somewhat more than 3 feet. The 160 cross cut through the lode east of the engine shaft is rather harder. There is no other change to notice.

ELKHORN.—Bullion produced in the mill for the week ending April 21, 9500 ounces.

EXPLORATION COMPANY.—(Alaska Treadwell Gold Mining Company).—Cablegram from Alaska announces the April clean-up as follows: Shipment of bullion, £25,216; tons of ore milled, 13,110; tons of sulphurets treated, 134; of bullion there came from sulphurets, £3229; estimated gross expenses for period have been \$19,301. The net profits available for dividends for the first 11 months of the present financial year, are, therefore, about \$394,000.

GUADALCAZAR QUICKSILVER.—The quantity of quicksilver drawn off for the week ending April 19, as cabled from the mines, amounts to 3000 lbs. = 40 flasks.

JAY HAWK AND LONE PINE.—The directors have received the following information by cable, viz.:—"Weather more favourable. Making good progress with repairing frozen pipes. Shall start mill in a few days."

KABOONGA.—The following cablegram has been received from the manager at the mine:—"South west drive 1138 feet, south east drive 1193 feet. Commenced rise in south west drive."

LISBON-BERLYN.—The manager has cabled that he clears up at the end of this month and will immediately cable results.

MOSMAN.—The directors have received the following cablegram from the manager at Charters Towers:—"Have crushed during the fortnight 169 tons of quartz from the Wyndham shaft for 92 ounces of gold. The fortnight's expenses of both the North Australian and Wyndham Mines are £900. I estimate the value of the stone at grass upon which mining expenses have been paid at £1250. The mill has been stopped for eight days owing to the impassable condition of the roads. The approximate value of this return is £310."

MOUNT ZEEHAN (Tasmania).—The following telegram has been received from Hobart, dated 24th inst.:—"Have treated during past 12 days 180 tons of ore yielding 39 tons concentrates containing about 29 tons 5 cwt. of lead and 2925 ounces silver. Have shipped per s.s. Oldenburg 90 tons of concentrates."

ORION.—The following information has been received by cable:—"Dividend of 10 per cent. declared."

SPRINGDALE GOLD MINING AND MILLING.—Mail advices under date April 14th, report:—"Mr. Davis (mine manager) writes to say that he now has 18 inches of quartz in Rip Van Dam level, showing a good quantity of smelting ore, and looking very encouraging. The mountain Lion shaft is now down 265 feet at 25 feet deeper. A new level will be commenced to run under the main ore body. Drifting and stoping in good ore continues in the other levels, and the mine in every respect is looking all right." On the 24th inst. the secretary in Denver cables:—"We will receive this week absolute title to new properties. Everything going on well."

VICTORY (Charters Towers).—The London Office has received the following cablegram from the company's head office in Sydney, dated April 20:—"Crushing for fortnight from No. 2 shaft, 440 tons for 556 ounces of gold."

VICTORIA AND QUEEN.—The London Office has received the following cablegram from the company's head office in Charters Towers, dated April 23:—"Crushed 74 tons for 146 ounces of gold."

ZEEHAN-MONTANA.—The following telegram has been received from Hobart, dated 24th inst.:—"Have treated during past 12 days 200 tons of ore yielding 39 tons concentrates, containing about 29 tons 5 cwt. of lead and 3705 ounces silver. Have shipped per s.s. Oldenburg 150 tons first-class ore."

THE CASTLE MAIL PACKETS.—The thirteenth annual general meeting of this company was held yesterday, at the Cannon Street Hotel, Mr. J. C. Bolton in the chair. In moving the adoption of the report, the Chairman said their earnings had considerably exceeded those of the previous year. The total receipts in 1892 were £87,641, and the dividend then was 7s. per share. The total for 1893 was £119,800, and the directors had devoted £92,500 to depreciation, leaving a net balance of £27,300. Depreciation got £20,000 more than in the previous year, and the shareholders would receive exactly double the amount of the previous year.—Sir W. Brown seconded the adoption of the report, which was agreed to.

THE NEW DIRECTORS OF THE WITWATERSRAND (KNIGHT'S) GOLD MINING COMPANY.—Mr. Struben and his nominees, no other gentlemen being proposed for election.

THE METAL MARKETS.

LONDON METAL MARKET.

BY A BARRISTER.

Name of Company.	Date.	Nature of Meeting.	Place.	Time.
Grand Trunk Railway	April 30	General	Cannon-street	12 noon
Don Pedro Gold Mining Co.	April 30	General	Winchester Ho	3.0 p.m.
West Killy	May 3	General	37, Walbrook	12 noon
Gold Fields of Mysore.	May 3	General	Cannon-street	12 noon
Uruguay Argentine Company	May 3	General	Cannon-street	12 noon
United Mexican	May 4	General	Winchester Ho	1.0 p.m.
Argentine Land and Invest.	May 4	General	Winchester Ho	12.30 p.m.

THE alteration and general equipment of the mill, the erection of the cyanide works, and the opening of a new mine have been carried out by the George and May Company at a cost of £31,000. The company will start crushing at an early date. It is said that, notwithstanding the patchy nature of the neighbouring reefs, the general average of samples has been remarkably good.

		Nickel			
98-99 percent guaranteed	100	100	100	100	0 1 7% 0 1 7%

EUROPEAN MINES.										
Amiños	L	36	36	36	2 0	-/3 Sept. '82	2 0 0	35,000	Spain	6, Queen-street-place
Argentina	C	—	—	—	1 0	—	1 0 0	133,185	Corsica	16, Philpot-lane.
English Cr. Spelter	—	—	—	36	1 0	5% Dec. '82	1 0 0	84,000	Lombardy	9, Queen-street-place
Fortuna	L	36	36	36	2 0	-/8 Sept. '82	2 0 0	25,000	Spain	6, Queen-street-place
Libiola	C	36	36	36	5 0	5/- Mar. '84	5 0 0	50,400	Italy	Dashwood Ho., E.C.
Linare	L	2 36	3 3d	3 36	3 0	4/- May '84	3 0 0	14,900	Spain	6, Queen-street-place
Marbella	J	61/6	62/8	62/8	10 0	8/- Mar. '83	10 0 0	25,000	Spain	78, Queen Victoria-st.
Mason & Barry	C	2 36	2 36	2 36	5 0	2/- May. '84	5 0 0	185,172	Portugal	87, Cannon-street.
Oscar	G	—	—	—	5 0	—	0 4 6	117,240	Norway	6-4, Austin Friars.
Pedernera	C	2/-	2/8	2/6	3 0	—	2 0 0	67,028	Italy	6-7, Queen-street-pl.
Ponteband	L	—	—	—	12 20	11/6 Dec. '83	20 0 0	14,000	France	6-7, Queen-street-pl.
Do Rinto	C	15 1/4	15 1/4	15 1/4	10 0	7/- Apr. '84	10 0 0	2,000	Spain	26, St. Swithun's-lane
Do. (Mort. Bonds)	C	10 1/2	10 1/2	10 1/2	10 0	5% Apr. '84	10 0 0	2,255,500	France	26, St. Swithun's-lane
Do. (Ind. do.)	C	10 1/2	10 1/2	10 1/2	10 0	5% Apr. '84	10 0 0	1,127,180	Spain	26, St. Swithun's-lane
El Estero	C	9 1/2	9 1/2	9 1/2	10 0	—	0 19 6	95,000	Servia	120, Bishop-st. Wn.
El Estero	C	4 1/2	4 1/2	4 1/2	10 0	1 1/4 X Mar. '84	10 0 0	625,000	Spain	120, Bishop-st. Wn.
West Prussian Fr.	—	—	—	10 1/4	10 0	1 1/2 Mar. '84	10 0 0	6,400	Germany	Glasgow.
West Prussian Fr.	—	—	—	18	10 0	1 1/2 Mar. '84	10 0 0	14,000	Germany	Walbrook Ho., E.C.

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

Name.	Closing Price, Apr. 27, 1894.	Closing Price, Apr. 20, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.	Name.	Closing Price, Apr. 27, 1894.	Closing Price, Apr. 20, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
Joe's Luck.....G	1/8 2/8	2/8	1 0	—	—	57,404	De Kaap	11, Queen Vic.-st.	Piggs Peak, New G	3/- 4/-	4/-	1 0	—	—	230,328	Swaziland	8, Queen-street-place
Jubilee.....G	5/4 5/4	6/4	1 0	30% Apr. '94	1 00	30,000	Witwatersrdt.	8, Old Jewry. f	Princessstroom...G	2/- 3/-	3/-	1 0	—	—	181,000	Potchefstroom	19, Bury-st., E.O.
Jumpers.....G	3/4 4	4	1 0	10% Jan. '93	1 00	100,000	Witwatersrdt.	29, Holborn Viaduct	Princess Estate G	22/- 24/-	24/-	1 0	—	—	72,946	Witwatersrdt.	31, Cornhill, N.O.
Klerksdorp.....G	1/3 1/3	1/3	1 0	—	—	150,000	Witwatersrdt.	8, Old Jewry.	Randfontein.....G	15/- 16/-	16/-	1 0	—	—	1,986,500	Witwatersrdt.	59, Holborn Viaduct, f
Knight.....G	15/- 16/-	17/-	1 0	—	—	250,000	Witwatersrdt.	110, Cannon-street.	Read's Drift.....D	9/- 10/-	10/-	1 0	—	—	50,000	Transvaal	19, Finsbury circus.
Kangaroo Est. G	4/4 4/4	4/4	3 0	12 1/2% Mar. '94	1 00	467,000	Witwatersrdt.	59, Bury-street, E.O.	Robinson.....G	5/4 5	5	1 0	—	—	543,750	Transvaal	59, Holborn Viaduct, f
Kapoor-Berly G	3/ 3/6	4/-	2 0	—	—	82,232	Witwatersrdt.	110, Cannon-street.	Rondepoort Un. G	—	—	1 0	—	—	465,000	Witwatersrdt.	Warford-court, f
Kapoor-Viel Est.	10/6 11/6	11/6	1 0	6% Mar. '90	1 00	344,093	Witwatersrdt.	8, Old Jewry.	Salisbury New...G	3/4 3/4	3/4	1 0	—	—	93,000	Witwatersrdt.	30-1, St. Swithin's-lane
Main Reef.....G	1 1/4	1 1/4	1 0	—	—	300,000	Witwatersrdt.	Warford-court, f	Sheba.....G	25/6 26/6	26/6	1 0	—	—	614,450	Witwatersrdt.	1, Crosby-square, f
Manica Ophi.....G	10/- 11/-	11/-	1 0	—	—	98,000	Mozambique.....	2, Pinner's Court.	Silati.....G	3/3 3/9	4/3	1 0	—	—	625,000	Witwatersrdt.	45, Gracechurch-st.
May Deep Level G	7/6 8/6	10/-	1 0	—	—	430,000	Witwatersrdt.	4, Lotherbury, f	Simmer & Jack...G	6/4 6/4	6/4	1 0	—	—	85,000	Witwatersrdt.	8, Sun Court, E.O.
Metropolitan...G	13/6 16/3	15/6	1 0	—	—	146,000	Witwatersrdt.	31, Cornhill, E.O.	S.A. Gold Trust...G	18/6 19/6	20/-	1 0	—	—	220,000	Witwatersrdt.	33, Cornhill.
Meyer & Charl...G	5/4 5/4	5/4	1 0	25% Dec. '93	1 00	71,827	Witwatersrdt.	1, Crosby Square, f	Spitzkop (New) G	3/- 3/3	3/3	1 0	—	—	144,531	Witwatersrdt.	15, Bishopsgt-st, Wt.
Mitchell.....G	—	—	1 0	—	—	45,000	Witwatersrdt.	Warford-court, f	Stanhope.....G	1/4 1/4	1/4	1 0	—	—	34,000	Witwatersrdt.	1, Crosby Square, f
Moffatfontein G	6/8 7/8	7/8	1 0	—	—	200,000	Witwatersrdt.	Kimberley.	Rutherford H.....G	4/- 4/6	4/6	1 0	—	—	220,000	Witwatersrdt.	3, Rudge-row, E.O.
Moodies G. & E. G	8/6 9/6	9/6	1 0	—	—	240,000	De Kaap	8, Old Jewry f	Tautonia.....G	12/8 13/6	13/6	1 0	—	—	95,000	Witwatersrdt.	8, Old Jewry.
Moodies (S. & P.) G	4/- 5/-	5/-	1 0	—	—	120,000	De Kaap	8, Old Jewry.	Trans. Coal Trust...G	10/- 11/-	11/6	1 0	—	—	285,700	Transvaal	76, Old Broad-st. E.O.
Namaqualand...G	13/4 13/4	13/4	2 0	2/6 July '91	2 00	194,351	Namaqualand.	24, Leadenhall-bldg.	Trans. Est. & Dev. G	35/6 39/-	39/-	1 0	—	—	250,000	Transvaal	8, Suffolk House, E.O.
New Chimes.....G	11/16 11/16	11/16	1 0	—	—	70,000	Witwatersrdt.	8, Old Jewry. E.O.	Trans. Land (S.) G	2/6 3/6	3/3	1 0	—	—	169,999	Transvaal	33, Cornhill.
New Cross.....G	15/4 15/4	15/4	1 0	5% Aug. '92	1 00	195,000	Langlaagte	4, Bishopsgt.-st. Wt.	Un. Ivy Reef.....G	8/3 13/9	28/-	1 0	—	—	45,000	Witwatersrdt.	110, Cannon-street
New Jagersf.G	16/4 16/4	16/4	10 0	5% Mar. '94	10 00	100,000	Transvaal	5, Copthall-buildings	Un. Langlaagte...G	12/6 15/-	15/-	1 0	—	—	103,000	Witwatersrdt.	23, St. Swithin's-lane
New Primrose...G	4/4 4/4	4/4	1 0	4% July '93	1 00	230,000	Witwatersrdt.	2, Draper's-gardens.	Van Ryn.....G	12/6 15/-	15/-	1 0	—	—	98,000	Witwatersrdt.	1, Crosby-square, f
Nigel.....G	21/6 21/6	21/6	1 0	10% Mar. '94	1 00	180,000	Witwatersrdt.	1, Crosby-square.	Victory Hill.....G	4 4/4	4/4	1 0	—	—	108,000	Witwatersrdt.	2, Rudge-row, E.O.
Noordgedacht E. G	2/4 2/4	2/4	1 0	25/- Nov. '93	1 00	150,000	Transvaal	8, Old Jewry.	Village Main Reef G	3/3 3/9	3/9	1 0	—	—	132,000	Witwatersrdt.	6, Old Jewry.
Ocean.....G	1/3 1/3	1/3	1 0	—	—	111,857	Transvaal	4, Sun Court, E.O.	Virginia.....G	—	—	1 0	—	—	48,335	Transvaal	26, Rudge-row, E.O.
Ophi.....G	4/4 4/4	4/4	1 0	—	—	284,000	E. Coast Africa	31, Lombard-street.	Vogelstruis.....G	4/4 4/4	4/4	1 0	—	—	153,000	Witwatersrdt.	34, Leadenhall-bldg.
Orange F.S.E.D	4/4 4/4	4/4	1 0	—	—	448,450	Orange F. State	10, Moorgate-street.	Wemmer.....G	2 2/4	2/4	1 0	—	—	55,000	Witwatersrdt.	19, Bury-street, f
Oriental.....G	1/9 2/3	2/3	1 0	—	—	500,000	De Kaap	Jamaica-bgs, Cornhill	Witwatersrdt.....G	2 2/4	2/4	1 0	—	—	250,000	Witwatersrdt.	19, Bury-st., E.O.
Otto's Kopje.....D	17/- 19/-	19/-	1 0	—	—	138,750	Kimberley	112, Cannon-st., E.O.	Woluhuter.....G	2 2/4	2/4	1 0	—	—	120,000	Witwatersrdt.	Warford-court, f
Parli Central...G	—	—	1 0	—	—	—	Transvaal	29-10, Hol. Via., E.O.	Worcester.....G	2 2/4	2/4	1 0	—	—	90,727	Witwatersrdt.	8, Old Jewry f
									Zwartland Land...G	—	—	1 0	—	—	150,000	Transvaal	19, Birch-lane, E.O.

THE EDITOR'S LETTER BOX.

* We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

THE METALLURGY OF LEAD.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—In the kindly and appreciative review of my work on Lead, to which you have devoted a leading article, there are one or two slight misconceptions into which you have fallen, which (as I intend to make the paper which you also publish the basis of a much more extended work on lead smelting) it is proper I should correct at the present time. I quite appreciate the great difficulty which any one has in completely grasping the drift of all the points I have examined, as the subject is so complex and contains the record of so many years work, that I quite anticipated that even the most experienced might fall into slight misconceptions of my position. I am glad that you appreciate the fact that since Percy's book was written there has been practically nothing done in the way of clearing up the chemistry of lead smelting, and that Hofman, Schnabel, and others simply quote the old story founded upon rough experiments of 25 to 50 years ago.

But although I have shown that every one of Percy's formulae requires amendment, I found myself in close agreement with many of his experimental facts, and I quoted the heading "supposed sub-sulphides of lead" (the italics are mine) to show that Percy did not believe in the existence of these compounds, and my paper goes to show that Percy was right, and that no sub-sulphides of lead exist, but that all such supposed compounds are mixtures of the mono-sulphide with metallic lead. I clearly prove that the "semi-metallic masses obtained by fusing lead sulphide with metallic lead," as quoted in Bloxam's Chemistry, are easily separated into their two ultimate terms lead and its mono-sulphide by simple crystallisation. I did not "find fault" with Percy for being unable to obtain accurate results. I merely quoted his words to show the extreme difficulty of any investigation into the furnace reactions of lead (to the "peculiar difficulty" of which Percy often refers) and to show that none of the formulae I was correcting were founded upon exact experiment, but upon rough trials and conjecture. For instance, the formation of PbSO₄ was supposed to be the keystone to the smelting of lead, yet no chemist—not even Percy—ever proved that PbSO₄ was present when lead was being set free, the statement being pure conjecture. I have proved that it is not present, and that if it were its presence would be an unmitigated evil, and instead of aiding in the obtaining of lead it would ruin the charge.

My paper being the first attempt to really survey and map out the furnace reactions of lead sulphide, and so found a scientific metallurgy of lead, I had to confine myself to this vast subject, and only give the faintest skeleton sketch of what will, in my opinion, be the future course of the treatment of galena. I did not, therefore, enter into the details of how this is to be carried out, and you very naturally point out that the condensation of the fume is the crucial point of the new process. It might seem strange that while I admit that fume is the *bête noir* of the smelters, I should yet propose to found a new process on the production of a much greater amount of fume than any smelter produces; but I am enabled to make such a proposal in perfect confidence, as there has been invented in recent times a system of condensation of which, I hope, shortly to give an account, by which lead fume may be condensed and collected, and that in a space of a few cubic yards for a large furnace, and yet the condensation is so complete that only the most refined chemical tests can detect lead in the effluent gases. By one step the condensation of lead fume has been raised from the roughest and most inefficient method (by settling) to the most perfect process of condensation known (much more perfect than the condensation of hydrochloric acid fumes at soda works), and this new condenser renders possible and easy of fulfilment the new metallurgical treatment of galena, which I have roughly sketched at the end of my paper.

I hope later in the year to give an account of this new method with facts and figures drawn from its application on a very large scale, and we shall then see how fully my new formulae account for the observed facts.—I remain, faithfully yours, J. B. HANNAY.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—I have read with interest your criticism on Mr. J. B. Hannay's Metallurgy of Lead, but interested as I am in practical results, particularly on gold extraction, I beg leave to refer you to the recent correspondence that appeared in your Journal between "Scrutator" and the Hannay Gold Extraction Syndicate, and to enquire through your valuable paper what has become of the process, and whether they have at any point established the commercial value of the invention.

At the time when so many notices were being circulated as to probable developments in Africa and Australia, I advised my correspondents on the other side to cable me, if anything tangible to go for, but up to date nothing having transpired to warrant the assumption that a revolution in gold mining was

imminent, I called at 52, Queen Victoria-street, where the miniature process used to be demonstrated, but could hear of no one there connected with the operations beyond the fact that a certain gentleman, who looked like a proprietor, informed me not in very conciliatory or encouraging tones the tubs were still there, but no records left of any development.

I was naturally disappointed, and, wending my way towards Leadenhall, I called on a friend just home from Johannesburg, who is largely interested in the main reef there, and explained the situation. Fancy my surprise, therefore, when I learnt that though largely, and I may say absolutely, engaged in South African gold mining enterprises on the spot, he had never heard of the electro-cyanide process by J. B. Hannay. It is apparent, therefore, they have not conquered Africa. In the Australian papers I have observed some notices, but a feeling of distrust now prevails, which, aggravated by the delays and controversies of the past, must seriously affect the present situation.

What mineowners require is a clear and simple demonstration of fact, but sticking up an office in London and issuing Press notices will scarcely go down with colonists, who have a good deal of money and a good deal of sense left; hence, until satisfactory proofs are forthcoming on both sides, no support of any consequence will be forthcoming.

It is evident, however, the MacArthur-Forrest are spreading their wings in Africa, and to the point both directly and indirectly in the interests of all concerned. In Australasia, also, they are with more or less success pursuing their course, even as far north as the Etheridge in Queensland, and with the indomitable pluck that characterises the company, overcoming all difficulties which a year ago seemed insurmountable.

Why doesn't Mr. Hannay and his syndicate go there and operate upon the large fields of tailings that have accumulated for the past 20 years? If he can rescue gold in the presence of copper, or more especially oxidised copper, where the tailings have been exposed for a considerable time, he need not exhaust his energies over the metallurgy of lead. He will find a fortune, name, and fame awaiting him, and an opportunity of scoring for once, if he never scored before.

But a friend (who, by the way, is an authority on these matters) informs me that there is nothing definite in Mr. Hannay's gold extraction patents, and undertakes to prove it both from a chemical and mechanical standpoint.

In my own way, as an outsider, I referred to the Blue-book, and found that on 22nd September, 1890, he discovers that by electrical action and agitation gold and silver may be rescued from ores in the presence of a cyanide, and that chlorine may be dispensed with, and by placing two electrodes in different positions, and connecting same to the poles of a voltaic battery, the precious metal is extracted and deposited on the cathode, and in the same breath on November 25, in the same year, he discovers the same thing by introducing mercury on copper plates as the cathode. That the small particles of gold, subject to electric action, &c., are dissolved in the presence of a cyanide, and that the free gold and electrolysed gold are taken up on the amalgam, is all high sounding, but proves nothing, which has not been established. Where, then, does the discovery come in except in a mechanical form, and then impracticable?

By agitation every particle of gold must touch the mercurial surface. Can it be done without flouing the mercury, and can it be done without loss of cyanide and of mercury, and therefore of gold. It would appear not, but certainly I admit it is a carefully worded and complicated specification.—Yours truly, SPECTATOR.

CORNISH MINING AND ITS UNWROUGHT MINING GROUND.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Metalliferous minerals of every kind are the products of certain classes and conditions of rocks, and should be known to all having pretensions to a knowledge of the science. Fortunes could be reaped at home at a comparatively small outlay, while millions of English money are sent to and lost in distant parts of the globe, in the face of which rich home districts are overlooked or neglected by capitalists, who need incur little or no risk before parting with their money. A personal inspection can be made at this time of the year by excursionists, on the principle of pleasure and business combined. Some three weeks ago I called attention to the St. Columb district, where a discovery of tin ore had been made close up to the surface, but as I had not seen it for myself could not give any particulars. Since then my attention has been called to another outcrop in the same district (but I have not yet seen it), where sinking on a lode a few feet from surface produced three cartloads of tin ore, which on being taken to a neighbouring stamps and made marketable sold for the sum of £48 15s. 9d.—thus repeating the early history of Cornish mining, when the finding of such "chimneys" of ore invariably led to great wealth; indeed, it is the initial history of the great mineral deposits throughout the universe, and a few of such discoveries in the unwrought mining ground of Cornwall will do more to revive its waning industry, and deservedly reward those who lend a hand to propel the great wheel of mining progression, than all the assumed mining benefactors who have up to date visited the county.—I am, Sir, yours faithfully, CHARLES BAWDEN.

Poldice House, St. Day, Scornier, Cornwall

GEOLOGY AND MINERALOGY OF SHASTA COUNTY.

By HAROLD W. FAIRBANKS, F.G.S.A.
From the Californian State Mineralogist.

III.

(Continued from page 395.)

THE ridge north of Oak Run is capped with basalt; it terminates a half mile east of N. 4th Cow Creek, having near the end a height of 1700 feet. Where the road crosses Oak Run above Morley's an amygdaloidal serpentinoid rock outcrops. North of the creek the road passes for a mile over shaly rocks, with occasional patches of sandstone. The slates strike north 60 degrees west, dip 50 degrees to north east. The most of this rock has

A Porphyritic Aspect.

and the lenticular, shaly structure characteristic of dynamic forces. The high ridge to the north is capped with basalt.

Chico sandstones outcrop in a narrow strip for several miles along Oak Run, in T. 33 N., R. 1 W. It also appears in greater mass along Little Cow Creek, north of the high ridge separating the two creeks, and it is probable that it extends continuously through underneath the lava capping. Coal prospects have been found along the sides of this ridge for several miles, but the only locality in which any development had been made at the time of my visit is on the northern slope of the ridge, about half a mile east of the Donkey Mine, Sec. 12, T. 33 N., R. 2 W. Here the coal seams are shown in a shaft sunk a little above the outcrop. There is a total thickness of 23 feet exposed; this is cut up into numerous seams by the layers of clay. There are two seams of coal 2 1/2 feet thick, one 15 inches, one a foot, and several others slightly less. The aggregation of so many seams in a small space makes it easy to mine, and if the beds are really as extensive as the outcrops indicate, a valuable coal field exists here. The coal is apparently of good quality, though some iron pyrites occur in it at the spot where the opening has been made. A quarter of a mile to the west, and a little lower than the coal beds, felspar porphyry outcrops. This shows that it is probably only a little distance down from the coal to the auriferous series, and development only will show whether underneath the ridge this series rises high enough to cut off the coal. It is probable, however, that this series sinks towards the east and becomes buried under thousands of feet of the cretaceous beds. The elevation of the coal beds is 1900 feet. The strata are nearly level, but north of Little Cow Creek they outcrop 300 feet lower, showing a slight dip to the east. The coal is overlaid by sandstone; underneath is clay and shale.

The Coal Beds

are exposed along the southern slope of the ridge north of Little Cow Creek. They begin on the flat place, near the stage road, and extend up the creek for several miles. The older series outcrops just below where the road crosses the creek, but does not appear farther east; the cretaceous beds themselves are covered by lava tuffs about 6 miles up the creek. No developments have been made here, but there are apparently three sets of coal seams occurring within a perpendicular distance of 200 feet. The beds dip 5 degrees to 10 degrees east and north east. The lowest is near the head of the creek, and its thickness cannot be seen. The middle set evidently corresponds to the beds south of Cow Creek just described. The thickness is about 20 feet; elevation 1600 feet. It consists of two main parts; one 6, the other 8 feet, divided by several feet of clay. Each division contains several thin clay seams, the thickest solid coal seam being about 2 1/2 feet. There is no doubt but that coal is present here in sufficient quantity to mine, though the set of beds just described being enclosed in shale, much timbering will be necessary. The heavy bedded sandstones which outcrop along the side of the mountain on the north are conformable with the coal beds, and evidently belong to the same formation, though they have been reported to be miocene. North of this lava-capped mountain shales appear again, and about a mile south of Round Mountain the metamorphic rocks replace them. This rock appears like a tuffaceous porphyry, containing much chlorite.

A considerable area of level land stretches north from Round Mountain. The underlying rock is shale and sandstone with some thin seams of coal. A high ridge of volcanic tuff rises on the east, while westward, wherever the erosion has been great enough, the metamorphic series rises through the cretaceous. Near Montgomery Creek an area of the older series extends east of the stage road. The rock is generally either faintly porphyritic and fragmental, having a dark base mottled with red, or of a diabasic character with an excess of feldspar. The height of Montgomery Creek is 2160 feet. From this point north and east for many miles the country is entirely volcanic.

The surface of the country from the top of the mountain north of Montgomery Creek to the Big Bend of Pitt River is a nearly level plateau, having an elevation of 3000 feet, and sloping very gently westward. The deep canons of Hatchet and Roaring Creeks have been eroded in the western end of this plateau. At the spot where the upper road to the Bend crosses Roaring Creek there is

(To be continued.)

REPORTS FROM THE MINES.

We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining captains, and others would kindly make an effort to let their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.

BRITISH MINES.

GREEN HURTH.—April 20: Annie's Vein: At the south forehead the vein has widened out a little, and shows an improvement on the week's working, worth 2 tons per fathom. The stope in the back of the above is also looking better, worth 2 tons per fathom. The south drive from the sump on the above is also looking well; the ore is carrying better up in the roof about 3 feet above the forehead. This forehead and the small heading is being driven together, and taking these as a whole are worth 4 tons per fathom. In south west branch above 30 level the south forehead has further reduced in value since my last report; the end is also bearing eastward, worth at present 12 cwt. per fathom; although poor this is a kindly looking vein. At the north end the vein has improved, and is showing a little lead. We are still meeting with strong leads coming in from the north west. We have not yet met with the north west branch as expected; the vein we are driving on is showing a little improvement, and will continue it as a bye place.—W. Gray.

LEADHILLS.—W. H. Paul, April 23: Brown's vein: At the 160 fathom level, south of Jeffrey's shaft, the vein is 6 feet wide, strongly intermixed with spar and lead ore, and will produce 25 cwt. of the latter per fathom. In the 160 fathom level, north of Wilson's shaft, the vein is large, but too soft for producing ore. The vein in the winze sinking below the 145, north of Wilson's shaft, is now yielding 10 cwt. of ore per fathom. In No. 1 stope, over the 145 north of Jeffrey's shaft, the vein yields 35 cwt. of ore per fathom. In No. 2 stope over ditto the vein will produce 30 cwt. of ore per fathom. The vein in the stope over the 130 north of Jeffrey's shaft is worth 30 cwt. of ore per fathom. The 115 fathom level, driving north of Jeffrey's shaft, is in a vein 5½ feet wide, containing a strong mixture of spar with a little ore, but not to value. The vein in No. 1 stope, over the 115 north of Jeffrey's shaft, will produce 30 cwt. of ore per fathom. No. 3 stope over ditto north of ditto is worth 30 cwt. of ore per fathom. I regret to say that as yet there is no material improvement in the 100 fathom level, driving south of Wilson's shaft, on the portion of vein so productive in the level above; but we hope a favourable change may soon take place here. Some 25 fathoms behind the forebreast of this level there is a portion of the vein going off in the eastern side of the level, where we have placed some men to drive, and some good stones of lead ore have been broken at this point. We trust it may lead to something good. The drift over the 100, south of winze is extended 5 fathoms, the vein here has become unproductive and end suspended. The vein in the stope below the 100 north of Jeffrey's shaft is yielding 20 cwt. of ore per fathom. At a point about 4 fathoms south of Wilson's shaft in the 100 fathom level a crosscut has this day been started to drive eastward to intersect the rail and highwork veins, set to seven men at 120s. per fathom, including clearing stuff, &c. We have removed the men from the 85 south of Wilson's shaft for a time to the 100, to prove the vein standing to the east of that level. The vein in No. 1 stope over the 85 south of Wilson's shaft is worth to-day 100 cwt. of ore per fathom. In the drift from No. 2 stope over the 85 and north of winze the vein is yielding 60 cwt. of ore per fathom. In the winze sinking below the 70 south of Wilson's shaft the vein is 4 feet wide, containing a little spar, but without ore at present. The vein in the stope above the 50 south of winze is producing 70 cwt. of ore per fathom. In the stope below the 35 south of flat rod shaft the vein is worth 75 cwt. of ore per fathom. In the stope over same level south of flat rod shaft the vein will produce 20 cwt. of ore per fathom. Sarrow-croft vein: Gripp's adit driving south of George's Roust Vein: Here the vein is 5 feet wide, chiefly composed of quartz stone and barytes, with water issuing from the forebreast; a kindly end.

NEW MINERA.—Mining report for the two weeks ending April 20: 275 yard level, stope near forebreast west, four men, lode worth 3 tons lead ore and blende per fathom, estimated to produce 10 tons per fathom. 295 yard level, north lode west of cross cut, lode worth 2½ tons blende per fathom, four men on tribute, estimated to produce 7 tons per month. West of winze, two men on tribute, lode worth 2½ tons lead ore and blende per fathom, estimated to produce 5 tons per month. Near forebreast west, four men on tribute, lode worth 3 tons blende per fathom, estimated to produce 10 tons per month. 315 yard level, driving east of main cross cut, lode very wide, yielding some lead ore. West of incline shaft, four men on tribute, lode worth 2½ tons blende per fathom, estimated to produce 10 tons per month. East of incline shaft, six men stopping in the bottom of the level, lode worth 4 tons blende per fathom, estimated to produce 20 tons per month. West of winze, two men on tribute, lode worth 2½ tons blende per fathom, estimated to produce 5 tons per month. Near forebreast west, four men on tribute, lode worth 3 tons per fathom, estimated to produce 10 tons blende per month. 335 yard level, nothing further.—Dressing: 35 tons blende sent off since last report, making the total quantity sold 3993 tons blende and 1708 tons lead ore.

PHENIX UNITED.—Setting Report, April 26: West's shaft: To drive the 80 fathoms crosscut west in granite by four men at £3. To drive the adit level east by two men and two boys at £3 15s. Lode worth £8 per fathom.—Western mine: To drive the 100 fathom level east by one man and one boy at £4 15s. Lode worth £8. This level is also being driven west by two men and two boys at £8. Lode worth £10. Within the next fortnight we intend to drive this level by boring machinery. We are putting up a rise in the back of this level by one man and one boy at £4. Lode worth £11. To drive the 70 fathom level west by two men at £9. Lode worth £8. To rise and stope the back of the 40 west by four men. Lode worth £8. To rise and stope in the back of the 20 west by three men and one boy. Lode worth £8. No. 2 stope and rise in the back of this level west by six men at £4 15s. Lode worth £11. To rise in the back of the adit west by one man and one boy at £3 15s. Lode worth £8. No. 2 rise in the back of the adit west by four men at £2. Lode worth £9. To stope and rise in the back of this level west by four men at £4 10s. Lode worth £8. To stope and drive the midway level west by 12 men and three boys at £4 10s. Lode worth £12. In this part of the mine there are 11 stopes working by 30 men, the lodes being worth from £7 to £10 per fathom. And at various points throughout the mine we have 29 tribute pitchoes working by 92 men at tributes varying from 7s. to 13s. in the £ for tin.—John Williams, John Randle, William Manley, James Hoeking.

POLBERRO.—Charles Thomas, John Harper, April 23: The lode in the 26 east is 4 feet wide, yielding large quantities of both sulphurous and arsenical mudic, with a little tin. We have suspended the driving of the 26 west for the present, in order to rise against the 20 west in the tin ground. The 20 west is 6 or 7 fathoms short of the rise. The lode here has improved in appearance of late, and will, we believe, increase in value as it enters the channel of productive ground driven through below. In the 26 cross cut north we have driven 3 fathoms beyond the branch referred to in the last report. There are small branches containing tin in the present end, and the cross cut, as a whole, will now yield 10 lbs. tin to the ton.

PRINCE OF WALES.—S. Roberts, J. Prowse, April 25: Fair progress is being made in driving the crosscut north at the 193 fathom level. The ground is of a more congenial nature than we have seen before since we started, being mixed with capel and spar, with patches of rich looking prias, such as seen near the lode in the levels above.

WEARDALE LEAD.—Report on Weardale Company's mines for week ending 21st April:—Groverake: Firestone drift east, sparry vein, but hard and slow to drive; worth 12 cwt. per fathom. Adamson's drift west, vein more sparry and rather improved; worth 14 cwt. per fathom. Firestone drift west, strong sparry vein, but poor in ore; worth 6 cwt. per fathom. Groverake cubic fathom stopes worth 12, 10, 18, 12, 8, 14, 14, 12, 12, 8, 8, and 10 cwt. per fathom.—Boltsburn: The south flat opening out above Baty's crosscut looks favourable for ore, worth 20 cwt. per fathom. Forster's crosscut north, this flat shows a want of spar, and is hard to work, worth 12 cwt. per fathom. Drift east from Paul's old ground to Bell's ground shows more spar, worth 12 cwt. per fathom. Stopes above Watt's level in vein and south flat worth 24, 18, 34, 32, 24, 30, 16, 24, and 16 cwt. per fathom.—Greenlaws: Watson's drift, vein broken, composed of stone rider and spar, very little ore. Nattrass Gill drift continues nipped, crosscut to north abandoned. Stopes worth 12, 14, 14, 16, 15, 20, 18, and 12 cwt. per fathom. Lowe's drift, the rise in scar limestone shows no change. Lee's sump, stopes worth 14 and 20 cwt. per fathom.—Sedling: The 56 level is now opened 1034-6 fathoms east of drawing shaft by forepiling. The crosscut north from the bottom of the shaft is in 13½ fathoms. The flat continues strong, with rather more spar in the forehead. The lead about a fathom from the shaft is being tried by a rise. We are up about 3 feet, vein 6 inches wide of floor spar mixed with ore. 64 level east, vein 3½ feet wide of good floor spar and rider mixed with ore, end worth 20 cwt. per fathom. Stopes in 64 level worth 14, 16, 16, 12, and 14 cwt. per fathom. South vein, Stubbs' drift, stopes worth 12 cwt. per fathom. Ore raised for the week, 89 tons; ore dressed for the week, 80 tons; ore, slag, and fume smelted for the week 85 tons, producing 46 tons of pig lead.

COLONIAL, INDIAN, AND FOREIGN MINES.

HARQUAHALA.—Copy of Mr. T. Allen's report for the month of March:—Mining Department—ore-breaking: The Discovery vein, above first level, south, is supplying the mill daily with 10 tons of ore, assaying \$10 per ton in gold. A stope has been started in the old workings on both the north and south portions of the Discovery vein, above third level, north and south, near the old shaft. The ore is chiefly confined to the pillars left standing, carrying an average milling value of \$14 per ton in gold. The Discovery vein, above fifth level, south, as a whole, has been a fine producer during the month. Its width is variable, ranging from 4 to 20 feet. Rich deposits are found occasionally in the ore body, which help the average value very materially. Its milling value for the month has been \$25 per ton. We are only carrying a portion of the vein in the Discovery vein, above sixth level, south; the width under operation is 7 feet, and its average value is \$10 per ton in gold. The Iron vein, above fifth level, south, is 3 feet wide, assaying \$9 per ton in gold. Iron vein, above sixth level south is 4½ feet wide, with an assay value of \$14 per ton in gold. We are stopping on the main vein in Golden Eagle Group above first level, which connects the north and south shafts; the stope is started midway between the two shafts. The vein is 3 feet wide, and assays \$25 per ton, due to the presence of a streak of 6 inches of rich ore in the centre of the vein.—Prospecting Department: Discovery vein, first level north, on the north side of the old shaft, a drift has been run in a south east direction on a seam of ore averaging \$11 per ton. Its total length reached 35 feet, when the ore gave out. A raise started in the face of this drift a height of 22 feet broke into old workings. Discovery vein, fourth level north, 90 feet north of the old shaft we are raising on the footwall section. This raise is all in ore of a low grade value—viz., \$4 to \$5 per ton. Intermediate cross cut between third and fourth level north has advanced 16 feet during the month, and is now connected with the big stope on its northern end. In the last few feet we met with a number of small bunches or pockets of good milling ore. The drift in Iron vein, sixth level, south, has been advanced 42 feet during the month. The vein, which at first was 3 feet wide, assaying \$9 per ton, has narrowed down to almost nothing in consequence of a large roll in the footwall. The total length of No. 2 crosscut, sixth level, south, is 92 feet 6 inches, the distance advanced for the month being 65 feet. Nothing important has been met with here. At a point 10 feet west of the face of No. 2 crosscut, No. 3 raise, sixth level, south, a raise has been put up a height of 30 feet to connect with the fifth level. The point of connection is immediately north of the deep winze on the Iron vein on the fifth level, and just south of the ground caved under the old administration on the north end of the Iron vein. This raise will enable us to start stoping on the Iron vein towards the old caved ground. At 60 feet south of Crosscut No. 2 (No. 3 Crosscut, sixth level, south) we have commenced driving east—paralleling Crosscuts Nos. 1 and 2. It has advanced 43 feet, developing nothing of importance. The main tunnel (Golden Eagle group) has been advanced 10 feet; the face is hard quartzite, carrying a few colours of gold. We have started drifting south on the main vein—tunnel level (Golden Eagle group). The vein is narrow and low grade in value. Diamond Drill: This machine has been used for prospecting the hard porphyry belt on the north end of the 4th level. The work done shows the porphyry to be unproductive in gold; we have therefore suspended operations, and are moving the drill to the 6th level for testing the rock at various points. Everything underground is in good working order. Milling Department: The mill started on March 1 again on a producing basis, and has worked steadily throughout the month. We shut down on March 31 for the clean-up, and the following figures represent the month's operations:—Tons crushed, 2926 tons; amalgam cleaned up, estimated to yield \$37,000; working expenses—revenue account, \$10,400; estimated profit for the month, \$26,600. Add—Net yield from amalgam and coarse gold from bar No. 4, November account, after adjustment of bullion sales account, \$147236; profits from general store for six months—October, 1893, to March, 1894, inclusive \$3000; at \$4.85 to £ sterling=£6406—£31,07236. Average loss in tailings \$2.69 per ton.—Miscellaneous work: The mill addition is progressing satisfactorily. Most of the machinery is now on the ground, and the steelwork is on the way to Phoenix, after a delay caused by the shutting down of the Pacific Rolling Mills furnaces for repairs. I anticipate that the new stamps will be dropping early in May. A small general office, with sleeping rooms attached for the staff, has been erected at a small cost. The machinery, which has all been rearranged, is being housed. The mill engine, dynamo, and air compressor stand side by side, and the boilers occupy a separate and adjacent building. The hauling of the ore from the Golden Eagle Mine has been given out by contract at 74 cents per ton. Everything on the ground is in good working order.

KAPANGA.—W. H. Argall, March 12: I beg to hand you report for four weeks ending 10th inst. Larnack's engine shaft has been sunk during the month 19 feet by 12 men, total depth 640 feet. In course of sinking we encountered a number of small veins of quartz bearing about north and south and underlying to the west. The country rock is harder and highly mineralised throughout. The shaft has been timbered and divided and new cage road put in to the bottom which enables us to take the stuff away direct without being twice handled. We have also put in a good strong pent house for the protection of the men and a heavy door over the winding shaft. Dunkin's rise above the 300 on Scotty's hanging wall branch has been put up another 15 feet, total distance 75 feet. Occasionally strong blotches of gold were seen in the quartz, but the stuff generally was not payable. When the two branches junction we expect to get good ore. The south east drive on a branch from Scotty's footwall portion at 300 level has been extended by one man 6 feet. The reef formation is about 4 feet wide and composed of quartz and clay, a deal of pyrites being mixed up in the rock. The rise above the 300 level on the footwall part of reef has been put up 10 feet by one man. The branch looks well, a few loose colours of gold having been seen. Just over this place in the hanging wall portion rich gold was obtained formerly, so it is very probable we may get a similar branch again shortly. The machinery and pitwork are working fairly well.

MOUNT ZEEHAN (Tas.).—Manager reports for week ended 13th March: Argent Section: Main engine shaft, No. 6 lode, 72 feet level north, stoping continued, but no ore raised as mill is engaged crushing for neighbouring mine. Lode is 1 foot wide of fair quality

seconds. The 72 feet south has been extended 15 feet 6 inches. Lode shows 1 foot of lode matter, carrying nice milling ore.—132 feet level north: Stoping continued, but no ore raised for reason above stated. Lode is 6 feet wide, and of about the same quality as before.—132 feet level south: Have risen 3 feet, total 8 feet. Lode 2 feet wide, yielding low grade milling ore, but improving.—Frances lode, Prospect shaft: Satisfactory progress has been made in erection of winding and pumping plant, and shall resume sinking on the 16th inst. Concentrator has been run 78 hours on local company's ore, and has milled 317 seconds for 65 tons concentrates, assaying 71 per cent, lead and 87 ounces silver.—Tributing: The tributaries on our Queen Extended section have erected engine for winding water, and those on the corner of our Argent section are sinking a shaft to 50 feet. All our machinery working well.

OSCAR GOLD.—The following report has been received from the mine dated Hagesund, April 21:—Hodgkinson Lode: The 500 feet level north has been extended during the week 10 feet. The lode in present end consisting of quartz, calcspar, and schist is nearly 5 feet wide, in which quartz holds a width of about 15 inches. The lode quartz is well mineralised, but is without visible gold. For some weeks the lode has been much intermixed with the country rock. A decided improvement has now taken place in this respect, the lode having a much more regular appearance. In the 200 north the quartz in lode has varied in width from a few inches to nearly 2 feet—the south winze where narrowest has assayed richest for gold. The lode is still dipping very flat and just now is letting in a little water. The small stope working in back of 150 south show quartz 15 inches in width, which assay 3½ dwts. of gold per ton. All other workings are without alteration.

SOUTH-EAST MYSORE.—Fortnightly report of Captain McScantlebury, mine agent, April 4:—Beresford's shaft: Since my last the shaft has been sunk 9 feet 6 inches, which now makes a depth of 87 feet 3 inches on the course of the lode and 185 feet from surface. The lode is fully 6 feet wide composed of quartz, copper, arsenical and iron pyrites. Three assays have been made with the following result:—Quartz against hanging wall, 11 dwts. 17 grains; quartz middle of lode, 3 ounces 6 dwts.; quartz on footwall, 3 dwts. 6 grains. The footwall quartz is intermixed a great deal with white iron pyrites. Pigott's shaft has been sunk 10 feet 6 inches, now 164 feet from surface. The rock is a little easier, which I think indicates that we are getting near the lode. If the lode continues at the same angle as what the old workings are in the crosscut at the 50 feet level, we ought to strike the lode in 5 feet more sinking.—Surface: We are pushing on the erection of air compressor. We hope to have it ready to work by the time Beresford's shaft is down to a depth of 200 feet, so that we may be in a position to open on the lode at this level with rock drills.

SUTHERLAND REEF.—March 24: Under above date mine manager reports: I have carefully gone into the amount of ore that we have in sight available for stoping, and find have down to the 216 level 2294 tons; in addition to this we are daily adding to the amount of ore which we already have at the surface. When our hauling engine is erected and the shaft down to the 3rd level, I estimate we shall be able to advance our headings at the rate of 300 feet per month. This is at the lowest estimate; it will then give us 3878 tons of ore available for stoping per month.

TOLIMA.—The directors have received advices by the mail of April 25 from their mines, of which the following is an abstract:—Frias February returns, 200 tons (silver estimated at 2s. 3½d. per oz.), £2944 8s.; ditto, cost, £4961 19s. 10d.; ditto, profit, £4282 8s. 2d. The underground agent reports 95 fathoms 5 feet 7 inches of ground expended, of which 71 fathoms 5 feet 8 inches were productive, leaving 23 fathoms 5 feet 11 inches of unproductive ground. The superintendent, writing under date of March 15, states that the lode in the 140 east end maintained its previously-recorded improvement, and averaged during the month of February a yield of 1 ton per fathom of high grade ore, an average sample from which gave on assay 456 ounces per ton. He adds that at the date of writing the lode at that point continued very strong, and afforded prospects which he considered most favourable. At the 90 fm, east end the decline, previously reported had proved only temporary, the lode having resumed its favourable appearance, yielding 2 tons of good grade mineral per fathom. A prospecting winze sunk in this level 7 fathoms from the forebreast was down 10 feet, and for the full width of the lode yielded 1½ tons per fathom. Though the 110 east end was poor at date, the superintendent says he has every reason to expect to cut mineral at no very distant date.—Underground Report: Engine Shaft: The cutting of the footwall from the 100 to the 110 fathom level is now practically finished, and we have also cut down the shaft to 58 feet below the 120 fathom level. At date of writing we are cutting down hanging wall side of shaft from the 110 to the 120 fathom level, also we are prepared to sink the shaft below the 130 fathom level. 140 fathom west end was driven 8½ feet by two men at \$80 per fathom and it yielded 5 cwt. of mineral per fathom. The lode yet continues rather disordered. 140 fathom east end was driven 17½ feet by four men at \$80 per fathom, and yielded 1 ton of mineral per fathom. The lode here has steadily maintained an improvement, and the prospect is very encouraging. 130 fathom west end was driven 13½ feet by four men and a boring machine at \$65 per fathom, being 247½ feet as total west of winze. The lode has become tighter to work with also a slight improvement, 130 fathom east end north branch was driven 8½ feet by two men at \$65 per fathom, and remains poor. 120 fathom west back stope No. 1 was stoped 39½ feet by four men at \$27 per fathom, and yielded well. 120 fathom west back stope No. 1 was stoped 42 feet by four men at \$26 per fathom, and yielded as usual. 120 fathom east end was driven 17 feet by two men at \$58 per fathom, and yet remains poor. 120 fathom east back stope No. 1 was stoped 25½ feet, by four men at \$30 per fathom, and yielded 2 tons of mineral per fathom. 110 fathom east end was driven 25½ feet by four men and a boring machine at \$65 per fathom, being 690½ feet as total east of shaft. The lode, although it is poor, yet it maintains a very fair and favourable appearance. 110 fathom east cross branch was driven 9 feet by two men at \$55 per fathom, and yielded 1 ton of mineral per fathom. 110 fathom east back stope, No. 1, was stoped 6 feet on company account, and yielded well. 110 fathom east back stope No. 1a was stoped 32 feet by four men at \$18 per fathom, and yielded well. 110 fathom east back stope No. 3 was stoped 9½ feet by two men at \$21 per fathom, and yielded as usual. 110 fathom east back stope, No. 3a, was stoped 21½ feet by four men at \$26 per fathom, and yielded as usual. 110 fathom east cross branch was stoped 60½ feet by four men at \$28 per fathom, and yielded 2 tons of mineral per fathom. 110 fathom west back stope, No. 1, was stoped 28 feet by six men on company account, and yielded well. 110 fathom west back stope, No. 2, was stoped 10½ feet by two men at \$25 per fathom, and for the time being it is suspended. 100 fathom east back stope was stoped 50½ feet by four men at \$18 per fathom, and yielded well. 90 fathom east end was driven 22½ feet by four men at \$63 per fathom, being 822½ feet as total east of shaft. The lode has shown a decline, and yielded 1 ton of mineral per fathom, but during these last few days the lode has again improved, and from general appearances the present prospect may be considered good. 90 fathom north side was stoped 8 feet on company account, and yielded 10 cwt. of mineral per fathom. The object of this was to make room for the sinking of a winze below this level to the 110, the which is now started. The 90 fathom east end (Welton's lode) was driven 22½ feet by four men and a boring machine at \$67 per fathom, and it yet remains poor. 80 fathom east stope was stoped 40 feet by four men at \$28 per fathom and yielded well. Shallow adit crosscut was driven 7½ feet by four men at \$75 per fathom, and is without change to note. Straightening mouth of shallow adit was driven 23 feet by four men at \$40 per fathom. Crosscut to new lode was driven 2½ feet by two men at \$120 per fathom, being 375½ feet as total length, and is without change. Real de Frias deep adit west was driven 37½ feet by four men at \$40 per fathom, being 427½ feet as total west of shaft, and is without change. Old Spanish Crosscut: This was further cleared upon course of lode to its end, and find it poor in this part. It is probable that the main workings are standing further south of this level. In the intermediate valley between Frias and Real Mines we cleared another old Spanish level for 72 feet in length and found nothing to value.

ALMADA AND TIRITO.—Report for the month ending March 31:—Dios Padre: The 350 feet level driving north has been extended 22 feet 8 inches by three men, and but for the hard nature of the ground we should have already cut the main part of the lode, and communicated with the driftage south of the winze, which I hope to effect in the coming week. The 350 feet level driving south of Pacheco's winze is on a nice looking lode yielding small quantities of black and green ore; 19 feet 1 inch were driven by three men. The 250 feet level driving north is being opened up at a good speed, and the composition of the lode red porphyry with stringers of quartz and red clay, and is of a promising character; 46 feet 2 inches were driven by four men. The 250 feet level driving south is on a massive lode of very hard quartz showing stains of copper; 10 feet 9 inches were driven by two men. Stopes: The stope back of the 156 feet level north of Cruz Verde shaft has somewhat improved. Fair quantities of ore containing 59 ounces silver per ton are being sent to the mill. Paying quantities of ore are being returned from the stope back of the intermediate below the 12 fathom level, and also from a stope back of the 24 fathom level north and south of Cecilio's winze.

AUSTRALIAN BROKEN HILL CONSOLS.—The mining manager reports by mail for the fortnight ended 15th March: Block 96: Main Shaft, 280 feet East Prospecting Drive; No. 5 rise driven 8 feet, total 19 feet 6 inches. As no improvement took place here, have put men back in No. 4 rise, in which they are at present engaged in taking up the bottom. Taking up bottom No. 4 rise, driven 3 feet 6 inches. Incline sunk 4 feet, total 540 feet 6 inches. Lode has considerably widened, and shows fairer. No. 5 level west of incline driven 2 feet 6 inches, total 9 feet 6 inches. Formation large, containing compact vein of carbonate of iron and calcite. A little fairer has been seen here. No. 4 level east of incline driven 8 feet 6 inches, total 155 feet. No change. Men have resumed driving on contract. No. 3 level east of incline driven 8 feet. Vein, which contained the ore mentioned in last report, has pinched out. Water showing. Men engaged in stoping upwards from level. Stoping off 280 feet level west driven 12 feet. Vein has yielded some carbonate, but no ore. 280 feet level west, prospecting drive, No. 1 rise driven 10 feet 6 inches, total 24 feet 6 inches. Ore cut upwards. Men are now following downwards the shoot of ore below level. Stopes below level driven 4 feet. Note: The quantity of rock mined during the fortnight was 2663½ cubic feet.

BALAGHAT MYSORE.—Joseph Pryor, April 4: Ogle's Shaft: I am glad to say we are now making a little better headway towards sinking this shaft; it is now down 5 feet below the level. The lode although presenting a kindly appearance does not yet yield any gold to value. The 800 feet level north has been advanced 10 feet, or 68 feet 3 inches from the shaft. The quartz is fully 1 foot 6 inches wide, and assays 5 ounces 13 dwts. 20 grains of gold per ton. A stope in the back of this level yields quartz of about 1 foot wide, and assays 2 ounces 1 dwt. 1 grain per ton. The 800 feet level south from the bottom of the No. 1 winze in the 730 feet level north has been driven 8 feet, or 9 feet 6 inches from the winze. The quartz is 15 inches wide, and assays 3 ounces 9 dwts. 1 grain per ton. We hope to communicate this drive with the main or 800 feet level north of the shaft in the course of the next fortnight. We have also commenced driving north from the bottom of this winze, and have extended the same 7 feet from the winze. The quartz is 1 foot wide, and assays 4 ounces 13 dwts. 8 grains per ton. The stopes in the bottom of the 730 feet level north yield quartz of from 6 inches to 1 foot wide, and assay on an average 1 ounce 17 dwts. 22 grains per ton. The stopes in the back of this level produce quartz of about 1 foot wide, and assay on an average 1 ounce 9 dwts. 22 grains per ton. The stopes in the bottom of the 660 feet level north yield quartz of from 6 inches to 1 foot wide, and assay on an average 16 dwts. 18 grains per ton. Haine's shaft has been sunk 8 feet 6 inches, or 65 feet 6 inches below the 800 feet level. The quartz varies from 1 foot 1 inch to 6 inches wide, and assays 9 dwts. 5 grains per ton. If all goes well we hope to commence the new or 870 feet level before the next report. The 800 feet level south has been advanced 17 feet 3 inches, or 190 feet from the shaft; the quartz is 1 foot wide, and assays 6 dwts. 12 grains per ton. The ground in the stopes near the No. 1 winze in the bottom of this level continues to give us trouble, and is too dangerous to admit of the winze men working; hence comparatively nothing has been done in the winze during the last fortnight. I may say we are securing this place as fast as possible, and hope soon to have it thoroughly and completely secured, when the sinking will again be resumed. The stopes in the back of this level produce quartz of from 1 foot to 18 inches wide, and assay on an average 12 dwts. 18 grains per ton. The No. 2 or midway winze in the bottom of the 730 feet level south has been sunk 8 feet, or 71 feet 9 inches below the level. The quartz is 1 foot wide, and assays 6 dwts. 12 grains per ton. Having reached the necessary depth in this winze for the 800 feet level we have just started driving north and south, so as to hasten the communications with the main or 800 feet level from Haine's and Ogle's shafts. The stopes in the bottom and back of the 730 feet level south yield quartz of 1 foot wide, and assay on an average 7 dwts. 21 grains per ton. Tennant's Shaft: We are pushing on as fast as possible with cutting of the necessary ground for the tip plat at the 350 feet level, and hope soon to have it completed. We have also deepened the shaft 4 feet, or 7 feet 3 inches below this level. The quartz is about 4 feet wide, and assay 7 dwts. 14 grains per ton. In addition to the above we have further extended the 350 feet level north 16 feet 3 inches, or 23 feet 9 inches from the shaft. At about 15 feet behind the present end we intersected another small crossing of somewhat similar character to that recently passed through in the shaft. This has evidently had a beneficial effect on the lode, as since striking it the quartz, which has maintained an average width of from 3 to 4 feet in this level, has very much improved in value, assaying from 1½ to 1¼ ounces per ton. The last assay being 1 ounce 7 dwts. 1 grain per ton. This is undoubtedly an important improvement, and should it continue will soon place us in a position to make good returns from this part of the mine. The 350 feet level south has been driven 16 feet 9 inches, or 24 feet 6 inches from the shaft. The quartz varies from 5 to 6 feet wide, but only assays 4 dwts. 16 grains per ton.

HARRIETVILLE.—Fortnightly report of Mr. T. G. Davey, superintendent, dated March 16: Mons Meg Mine: Drive south of winze on main shoot, 100 feet below tunnel D advanced 15 feet, total 19 feet. Lode 6 feet wide and carrying visible gold in a small vein near hanging wall. Crosscut west of north drive at same level extended 8 feet, traversing a number of quartz veins of promising appearance, but so far non-auriferous. Stopes: Lode in stope over drive south of tunnel D from 6 feet to 10 feet wide, consisting of sandstone and quartz veinlets of payable character. Underhand stope at 290 feet level below tunnel J, lode 3 feet wide and payable, carrying a fair amount of visible gold. Lode in stope 50 feet above tunnel J 2 feet wide, and of fair quality. We are about to stope out the foot and hanging wall veins in the north shoot over tunnel J, which, if separated from remainder of lode, should yield gold in payable quantities. Guerdon Mine: Work temporarily suspended. Swindle lode: South drive on quartz vein in shallow tunnel advanced 6 feet, total 10 feet. This vein was somewhat auriferous, but is now small and poor; the tunnel is, therefore, being further extended. Returns: Following are the returns for four weeks to 6th instant, viz: Mons Meg 429 tons, Guerdon 30 tons, yielding together 154 ounces 13 dwts. 12 grains of gold. Pyrites Works: 58½ tons concentrates for 61 ounces of gold; total 215 ounces 13 dwts. 12 grains, which is a vast improvement on the returns for the previous month.

MYSORE GOLD.—R. Hancock, April 4: Mining operations for the fortnight ending April 2: Rowse's shaft has been sunk 5 feet 6 inches, making a total depth of 137 feet below the 1360 feet level. 1360 feet level north of cross cut end has been driven 1 foot 6 inches, making a total distance driven of 101 feet 4 inches; the lode is 1 foot wide, assaying 2 ounces 5 dwts. 17 grains. The rise in the back of this level has been put up 11 feet 6 inches, making a total height of 76 feet; the lode is 2 feet wide, assaying 13 dwts. 1 grain. 1360 feet level north of winze end has been driven 29 feet, making a total distance driven of 40 feet; the lode is 3 feet 6 inches

wide, assaying 2 dwts. 14 grains. The winze in the bottom of this level has been sunk 12 feet, making a total depth of 22 feet; the lode is 6 feet wide, assaying 4 dwts. 13 grains. We have started to drive the 1360 feet level south of the winze, which has been driven to date 10 feet; the lode is 1 foot wide, assaying 1 ounce 19 dwts. 4 grains. There are three stopes in the back of the 1260 feet level north, the average width of the lode being 7 feet 8 inches, giving an average assay of 8 dwts. 21 grains. The rise in back of 1260 south has been put up 11 feet 6 inches, making a total height of 296 feet 6 inches. The lode is 4 feet wide, assaying 2 ounces 8 dwts. 6 grains. There are two stopes in the back of this level, the average width of the lode being 1 foot 9 inches, giving an average assay of 2 ounces 16 dwts. 8 grains. There are four stopes in the 1160 feet level north, the average width of the lode being 1 foot 6 inches, giving an average assay of 17 dwts. 11 grains. The 1160 feet level south end has been driven 12 feet 6 inches, making a total distance driven of 140 feet 6 inches. We have a pair of men engaged cutting a plat at this level. There are three stopes in the 1060 feet level north, the average width of the lode being 1 foot 2 inches, giving an average assay of 1 ounce 1 dwt. 2 grains. We have two pairs of men stripping down side in the bottom of this level, in which the lode is 1 foot 6 inches wide, assaying 1 ounce 10 dwts. We have a pair of men engaged stripping down side in the back of the 990 feet level north, in which the lode is 1 foot wide, assaying 7 dwts. 19 grains. The lode in the stope in the back of the 890 feet level north is 2 feet 6 inches wide, assaying 4 dwts. 13 grains. We have a pair of men engaged stripping down side in the back of this level, in which the lode is 1 foot wide. No assay made. The lode in the stope in the back of the 780 feet level north is 3 feet wide, assaying 6 dwts. 12 grains. The end in the 620 feet level north of cross cut has been driven 6 feet 6 inches, making a total distance driven of 223 feet 6 inches. The lode is 6 inches wide, assaying 3 dwts. 22 grains. The winze in the bottom of this level has been sunk 9 feet 2 inches, making a total depth of 35 feet 6 inches. The lode is 2 feet wide, assaying 1 ounce 12 dwts. 16 grains. There are 2 stopes in the back of this level, the average width of the lode being 2 feet, giving an average assay of 14 dwts. 23 grains.—620 feet level south of crosscut: The rise in the back of this level has been put up 12 feet, making a total height of 117 feet. The lode is 3 feet wide, assaying 2 dwts. 14 grains.—620 feet level south: The lode in the stope in the back of this level is 2 feet wide, assaying 2 dwts. 14 grains. The 466 feet level north No. 1 crosscut has been driven 2 feet, making a total distance driven of 64 feet 3 inches. The rise in the back of the 400 feet level north of crosscut has been put up 9 feet, making a total height of 102 feet 6 inches. The lode is 4 feet wide, assaying 3 dwts. 6 grains.—236 feet level north: Driving north on the quartz met with in the eastern side of the level 227 feet north of Rowse's shaft has been driven 2 feet 6 inches, making a total distance driven of 4 feet. The lode is 1 foot 6 inches wide, assaying 2 ounces 4 dwts. 9 grains. We have started to rise on the incline from the back of the stopes in this level 164 feet north of Rowse's shaft, with a view of effecting a speedier communication with the incline shaft started to-day about 300 feet south east of Rowse's shaft for the better development of the 620 chute. The rise has been put up 27 feet, making a total height from the back of the level of 163 feet. The lode is 2 feet wide, assaying 6 dwts. 12 grains.—Taylor's shaft, 400 feet level north: There are two stopes in the back of this level, the average width of the lode being 3 feet, giving an average assay of 4 dwts. 13 grains. Gilbert's shaft 650 feet level north end has been driven 17 feet 6 inches, making a total distance driven of 257 feet; the lode is 1 foot wide mixed, assaying 4 dwts. 13 grains. There are two stopes in 520 feet level north, the average width of the lode being 2 feet 6 inches, giving an average assay of 14 dwts. The lode in the stope in the back of 520 feet level south is 1 foot 6 inches wide, assaying 5 dwts. 5 grains. There are two stopes in 360 feet level north, the average width of the lode being 1 foot 9 inches, giving an average assay of 1 ounce 11 dwts. There are three stopes in the back of the 290 feet level north, the average width of the lode being 1 foot 3 inches, giving an average assay of 17 dwts. 16 grains. There are two stopes in 290 feet level south, the average width of the lode being 2 feet 7 inches, giving an average assay of 3 dwts. 6 grains. Tennant's shaft has been sunk 7 feet 1 inch, making a total depth of 62 feet 1 inch below the 520 feet level; lode 1 foot wide mixed, assaying 3 dwts. 22 grains. The rise in the back of the 520 feet level north has been put up 7 feet 6 inches, making a total height of 29 feet; the lode is 7 feet wide, carrying about 4 feet of quartz, assaying 1 ounce 2 dwts. 20 grains. There are two stopes in this level, the average width of lode being 4 feet, giving an average assay of 1 ounce 10 dwts. The winze in bottom of 360 north south of cross cut has been sunk 2 feet 6 inches, making a total depth of 15 feet; lode is 1 foot wide, assaying 2 dwts. 14 grains. The 290 feet level south, south of crosscut has been driven 3 feet 3 inches, making a total distance driven of 61 feet 6 inches. The lode is 7 inches wide; no assay made. The lode in the stope in the back of the 290 feet level south, north of crosscut is 1 foot wide, assaying 6 dwts. 12 grains. Schaw's shaft, 450 feet level north crosscut east has been driven 2 feet 6 inches, making a total distance driven of 14 feet 6 inches. The No. 3 rise in the back of this level has been put up 13 feet, making a total height of 90 feet 9 inches. The lode is 6 inches wide, assaying 5 dwts. 5 grains. The winze in the bottom of this level has been sunk 4 feet, making a total depth of 65 feet 6 inches. The lode is 1 foot wide, assaying 8 dwts. 11 grains. The lode in the stope in the back of this level is 1 foot wide, assaying 1 ounce 19 dwts. 4 grains. The rise in the back of the 450 feet level north, south of crosscut has been suspended, and the machine put to stope in the back north of No. 2 rise on a lode 1 foot 3 inches wide, assaying 1 ounce 14 dwts. 15 grains. The lode in the stope in the back of this level is 1 foot 9 inches wide, assaying 3 dwts. 22 grains. The winze in the bottom of the 320 feet level north has been sunk 3 feet 3 inches, making a total depth of 145 feet 6 inches. The lode is 1 foot 6 inches wide, mixed, assaying 1 dwt. 23 grains. The rise in the back of the 320 feet level north of crosscut has been put up 8 feet 3 inches, making a total height of 44 feet. The lode is 2 feet 6 inches wide, assaying 2 dwts. 14 grains. The lode in the stope in the back of this level is 1 foot 3 inches wide, assaying 13 dwts. 1 grain. The 320 feet level south of crosscut has been driven 1 foot 6 inches, making a total distance driven of 154 feet. There is nothing here to report. The lode in the stope in the back of level is 1 foot 6 inches wide, assaying 2 dwts. 14 grains. 220 feet level north has been driven 4 feet 3 inches, making a total distance driven of 242 feet 6 inches.—McTaggart's Shaft: 320 feet level north has been driven 12 feet 9 inches, making a total distance driven of 155 feet 9 inches. The lode is 6 inches wide, assaying 3 dwts. 6 grains.—Glen Shaft: 250 feet level north has been driven 13 feet, making a total distance driven of 1285 feet 9 inches. There is a small stringer of quartz in the end. The crosscut east in this level has been driven 3 feet 6 inches, making a total distance driven of 234 feet. Ribblesdale's Shaft: This shaft has been sunk 12 feet, making a total depth of 238 feet. 1060 crosscut west has been driven 14 feet 6 inches, making a total distance driven 388 feet.—Williams's Shaft: The crosscut east from the shaft at the 173 feet level has been driven 3 feet 6 inches, making a total distance driven of 26 feet.—East Prospect Shaft: The crosscut west at the end of the south end of No. 2 crosscut was driven 24 feet, making a total distance driven of 67 feet and suspended, and the men put to drive a crosscut east at the end of the south end of No. 2 crosscut, which has been driven 24 feet 6 inches. The health of the camp is very good.

MOUNT LYELL.—The London committee have received the following report from the Melbourne board, viz, for week ending March: Engine Shaft 100 feet level: The west cross cut has been advanced 4 feet, total 46 feet. There is no change to report. The rock in the face is still very hard, but much mineralised.—50 feet level: The south drive has been extended 21 feet, total 46 feet, and timbered for the whole length. There is no change to report.—Stopes: The stopes over the north level are being continued as usual, and are furnishing ore of about the average grade.—No. 2 Shaft: The contractors have sunk 2 feet, and timbered 9 feet; total 90 feet, of which 85 are timbered. The country is unchanged.—No. 5 tunnel: The contractors have driven 35 feet, total 340 feet. The country continues favourable for driving.—New road: The road will be finished and handed over by the contractors at the end of the

week. The total length is 117 chains. The widening and repairing of the road from the junction to the mine is completed.—Ore raised: 200 bags, weighing 12 tons 5 cwt. 2 qrs., and containing 16,465 ounces of silver, or an average of 1340 ounces of silver, and 24½ per cent. of copper per ton, have been raised and sampled.—Ore despatched: 332 bags, weighing 16 tons 19 dwts. 3 qrs., and containing 26,022 ounces of silver and 4 tons 7 cwt. of copper, have been taken away by the packers.

MYSORE REEFS.—Fortnightly report of Captain M. Scantlebury, mine agent, dated April 4: Underlie shaft has been sunk 10 feet, which now makes a depth of 233 feet 3 inches from surface. The lode is fully 5 feet wide, but is intermixed with country rock and white iron. Although we occasionally see quartz showing visible gold, the general average of the whole is of low grade, as the following samples will show:—Sample No. 1 quartz against hanging wall, 2 dwts. 14 grains; sample No. 2 quartz against footwall, 1 dwt. 23 grains.—Vertical Shaft: The cross cut east at the 200 feet level to intersect the lode has been advanced 19 feet 6 inches, now 54 feet from shaft. I cabled you this morning that we had intersected the lode, which is 8 feet 9 inches wide. The lode is composed of quartz, copper, iron, and arsenical pyrites. In cutting through it I have seen several really good stones of gold, but the five samples taken show rather a low average—a little over 5 dwts. of gold to the ton. We have now started to drive north and south on it, and I think the next samples when taken out will show a much better average.—Trial Shaft: On the western run of old workings the water is so quick that we have had to suspend the sinking and put the men to cross out east to intersect the lode or ancient workings; 4 feet 6 inches has been driven in this direction.—Surface: We commenced to-day to build the loading for stamps engine.

MYSORE-WYNAAD CONSOLIDATED AND MYSORE WEST.—The following summary received by mail from the mining manager in India shows the work done during the month of March: Workings: North Shaft, 350 feet level south, ground cut 43 feet 6 inches. 350 feet south, No. 3 cross cut east, ground cut 44 feet. South Shaft, ground cut 10 feet 6 inches. 354 feet north, ground cut 38 feet 6 inches. 354 feet south, ground cut 33 feet. 354 feet cross cut west, ground cut 6 feet 6 inches. Total, 176 feet.

NINE REEFS.—Fortnightly report of Captain John Woodcock, mine agent, dated April 4: Vyvyan's shaft has been sunk 8 feet 10 inches, total depth below the 380 feet level 61 feet 2 inches. There is no change to notice in the nature of the lode, which is of a disordered character, composed principally of schist with stringers of carbonate of lime and a little pyrites, but at present carrying no quartz. I am hoping to sink to the required depth for the 460 feet level this month, after which we must drive a short distance to the north and south of shaft for fixing our air winch and room for cistern plat, &c., preparatory to the further deepening of this shaft, but before sinking below the 460 perhaps it will be advisable to put these men to crosscut west to prove if there is a better part of the lode standing in that direction.—Bennett's shaft: The crosscut west at the 145 feet level has been advanced 18 feet, total distance from level 188 feet 11 inches. The ground is favourable for driving and letting out an increased quantity of water, which I look upon as a good indication, and trust that we shall soon meet with something of value. South shaft has been sunk 5 feet 5 inches, total depth from surface 106 feet 7 inches. Our sinking has been unsatisfactory in the past fortnight but the best has been done. The hindrance has been through the weak state of the west side of the shaft, caused by a soft course of lode matter about 20 inches wide, which crossed the shaft and is now in the west side and letting out water freely. This makes the side heavy and dangerous, while the other side is all blasting ground, so you see the difficulty, and our timberman has to watch the place daily to prevent accidents.—Prospecting: On the lode 400 feet west of Malleon's, and now being worked by the Gold Fields on the West Balaghat Block. We resumed the sinking of our northern shaft on this lode on Monday. The lode is about 1 foot wide, but very little work has been done, and there is nothing to report. We have also made a trench 24 feet long and 6 feet deep near our southern boundary, in which we discovered the back of the lode, and we are now sinking a shaft on its course. The lode is 1 foot wide, composed of oxide of iron, friable country rock, and quartz veins. We have taken several samples from it, nearly all of which show fine colours of gold in pan washing.—Surface: All our works under this head are going on satisfactorily, and do not call for remark. We shall soon be working our winding engine for drawing the stuff and water from our south shaft.—Health: I am pleased to say the health of the camp continues good.

NUNDYDROOG.—F. W. Grey, April 4: Report of work done for the month of March: Taylor's shaft sunk 23 feet, total depth 1032 feet. The quartz in the shaft is now 1 foot wide, and assays 7 dwts. 12 grains per ton. 1000 north driven 75 feet, total length 350 feet. The lode is still small, 4 inches in width, assaying 6 dwts. 12 grains per ton. 840 north winze in bottom sunk 34 feet, total depth 158 feet. When we holed the 1000 feet level the lode was 4 inches wide, assaying 12 dwts. We then commenced a level north from this winze at the 920 and have driven 9 feet. The lode is 8 inches wide, and assays 10 dwts. 18 grains per ton. 840 north stope in back, ground stoped 15 fathoms in a lode 4 feet wide, assaying 10 dwts. 6 grains per ton. 840 north rise against main shaft risen 13 feet 6 inches, total height 58 feet. We have now holed through to the shaft. 840 north No. 3 winze in bottom, sunk 16 feet 6 inches, total depth 16 feet 6 inches. The lode is improving here and is now 1 foot wide, assaying 2 ounces per ton. 840 north stope in bottom, ground stoped 2 fathoms, in a lode 5 feet wide, assaying 15 dwts. per ton. 760 north stope in bottom, ground stoped 12 fathoms, in a lode 3 feet wide, assaying 13 dwts. per ton. 680 north driven 56 feet, total length 122 feet. There is no change in the rock, which is still very hard. Main shaft sunk 13 feet 6 inches, total depth 773 feet 6 inches when we holed the 840 rise. We shall square down the shaft and complete to the 840 as soon as possible. Kennedy's shaft sunk 11 feet, total depth 521 feet. We then started the 520 north and have driven 13 feet. The ground is changing, and we hope to have the lode in a few feet more. 440 north driven 51 feet, total length 343 feet. The lode is now 1½ foot wide and assays 15 dwts. per ton. 440 north rise in back risen 23 feet, total height 47 feet, when we holed the 370 north winze. The quartz is 2 feet wide, and the assay value 6 dwts. 12 grains per ton. 440 north stope in back, ground stoped 32 fathoms in a lode averaging 3½ feet in width, and assaying 1 ounce per ton. 440 south driven 30 feet, total length 226 feet. The lode is 6 inches wide, and the quartz is worth 3 dwts. 6 grains per ton. 370 north winze in bottom sunk 16 feet, total depth 22 feet 6 inches, when we holed the 440 rise. The quartz is 2 feet wide, and the assay value 1 ounce 5 dwts. per ton. 370 south rise in back risen 21 feet, total height 21 feet. The quartz is 6 inches wide, and assays 3 dwts. 12 grains per ton. We hope to hole to north shaft during this month. North shaft sunk 15 feet, total depth 315 feet. We shall connect this shaft with the 370 as rapidly as possible. The stopes, drives, &c., working by hand labour are as follows: 1000 feet south, ground cut 9 feet, total measurement 156 feet. Lode 6 inches wide, assaying 12 dwts. 920 north, ground cut 12 feet, total measurement 76 feet. Lode 1 foot wide, assaying 5 dwts. 12 grains. 920 south, ground cut 13 feet, total measurement 98 feet. Lode 6 inches wide, assaying 4 dwts. 6 grains. 680 north winze, ground cut 6 feet, total measurement 29 feet. Lode 6 inches wide, assaying 9 dwts. 18 grains. 680 north No. 1 bottom stope, ground cut 26 feet 6 inches. Lode 1 foot wide, assaying 8 dwts. 18 grains. 680 north rise and stope, ground cut 11 feet. Lode 6 inches wide, assaying 10 dwts. 680 north No. 1 back stope ground cut 18 feet. Lode 2 feet wide, assaying 16 dwts. 6 grains. 680 north No. 2 back stope ground cut 10 feet. Lode 9 inches wide, assaying 10 dwts. 18 grains. 600 north No. 1 bottom stope ground cut 15 feet. Lode 2 feet wide, assaying 15 dwts. 600 north No. 2 bottom stope ground cut 16 feet 6 inches. Lode 2 feet wide, assaying 13 dwts. 600 north No. 3 bottom stope ground cut 19 feet. Lode 1 foot 6 inches wide, assaying 17 dwts. 6 grains. 600 north No. 4 bottom stope ground cut 20 feet. Lode 1 foot 3 inches wide, assaying 9 dwts. 600 north No. 5 bottom stope ground cut 18 feet. Lode 1 foot wide, assaying 8 dwts. 600 north No. 6 bottom stope ground cut 15 feet. Lode 1 foot wide, assaying 16 dwts. 18 grains. 600

North No. 1 back stope ground cut 24 feet. Lode 2 feet 6 inches wide, assaying 18 dwts. 12 grains. 600 north No. 2 back stope ground cut 2 feet. Lode 1 foot wide, assaying 1 ounce 9 dwts. 6 grains. 600 north No. 3 back stope ground cut 19 feet. Lode 2 feet wide, assaying 10 dwts. 18 grains. 600 north intermediate ground cut 7 feet 6 inches, total measurement 7 feet 6 inches. Lode 2 feet wide, assaying 10 dwts. 520 north No. 1 bottom stope ground cut 13 feet. Lode 1 foot 3 inches wide, assaying 13 dwts. 520 north No. 2 bottom stope ground cut 15 feet. Lode 1 foot 3 inches wide, assaying 12 dwts. 520 north No. 3 bottom stope ground cut 21 feet. Lode 1 foot wide, assaying 14 dwts. 520 north No. 1 back stope ground cut 17 feet 6 inches. Lode 1 foot wide, assaying 15 dwts. 520 north No. 2 back stope ground cut 18 feet 6 inches. Lode 9 inches wide, assaying 9 dwts. 18 grains. 520 north No. 3 back stope ground cut 12 feet 6 inches. Lode 10 inches wide, assaying 7 dwts. 12 grains. 370 north No. 1 bottom stope ground cut 17 feet 6 inches. Lode 9 inches wide, assaying 6 dwts. 12 grains.—Kennedy's: 95 north No. 1 bottom stope ground cut 2 feet 6 inches. Lode 2 feet 6 inches wide, assaying 9 dwts. 18 grains. 95 north No. 2 bottom stope ground cut 7 feet. Lode 1 foot wide, assaying 8 dwts. 18 grains. 160 north intermediate ground cut 13 feet, total measurement 135 feet. Lode 4 inches, assaying 3 dwts. 6 grains. 160 north winze, ground cut 7 feet, total measurement 20 feet. Lode 6 inches wide, assaying 7 dwts. 12 grains. 160 south No. 1 back stope, ground cut 10 feet. Lode 9 inches wide, assaying 1 ounce 6 dwts. 300 south No. 1 rise and stope, ground cut 14 feet. Lode 2 feet wide, assaying 8 dwts. 300 south No. 2 rise and stope, ground cut 15 feet. Lode 10 inches wide, assaying 17 dwts. 6 grains. 300 north rise and stope, ground cut 14 feet. Lode 2 feet wide, assaying 13 dwts. 370 north No. 1 back stope, ground cut 30 feet. Lode 1 foot 3 inches wide, assaying 18 dwts. 12 grains. 370 south drive, ground cut 8 feet, total measurement 196 feet. Lode 10 inches wide, assaying 4 dwts. 6 grains. 440 north No. 1 back stope, ground cut 34 feet. Lode 6 inches wide, assaying 7 dwts. 12 grains.—Mills: Both mills and tailings machinery are running well.—Health: The general health of the camp is good.—Old Mill samples: Rough quartz through stonebreaker, 19 dwts.; smalls, 18 dwts.; tailings, 4 dwts. 12 grains.—New Mill samples: Rough quartz through stonebreaker, 17 dwts. 6 grains; smalls, 13 dwts.; tailings, 4 dwts. 12 grains.

OURO PRETO.—Passagem Mine: Incline shaft No. 2 was sunk 240 metres full size, in quartz, which though of a strong massive appearance is of too low grade for milling. 470 end north east was driven 350 metres. The ground has opened out well, and the end is now full size ore composed of quartz carrying tourmaline and arsenical pyrites. 470 end south west was driven 220 metres in mixed schist and quartzite. 435 end north east was driven 460 metres. The lode at present is rather more mixed with schist, but ore is holding under the floor. 435 end south west was driven 330 metres in stratified quartzite without ore. Cross cut at 435 north east was driven 190 metres in tabularite which is still extremely hard. 400 end north east was driven 7 metres in hard quartzite with a branch of ore against hanging wall. 400 end south west was driven 240 metres in schist without ore. 365 end north east was driven 410 metres. The lode has become somewhat mixed with quartzite, but against the roof, a branch of good quality quartz about 1 metre thick is holding forward. Cross cut No. 2 at 365 north east was driven 470 metres, and having passed through the ore body last reported is suspended. An end will be driven towards No. 1 cross cut for ventilation, and to open up the branch for stoping. End from No. 1 cross cut at 365 north east was driven 430 metres. It carries a branch of quartz along the floor, but most of the breast is in schist. End under No. 1 shaft at 365 was driven 690 metres, and has reached the point for communication by a rise to floor of incline, and it is expected this will be done very shortly. 365 end south west was driven 580 metres. The lode is gradually increasing in size, and the end appears to be getting into the regular ore body driven on at level above. End over 365 was driven 430 metres in schist with a branch of tourmaline ore against the roof. 315 end north east was driven 480 metres, and continues full size in good quality quartz carrying strings of pyrites throughout. 315 end south west was driven 430 metres. Quartz is holding along the floor, but upper part of level is in quartzite. Rise at 315 south west was advanced 6 metres, and continues to improve, the breast being full size in quartz lode, carrying patches of tourmaline ores. End on lower lode at 265 south west was driven 370 metres, and has holed to floor of stope, giving an easier exit for the ore broken above. 175 end south west was driven 340 metres, but continues without change in schist. Stoping: In the north east section the principal stoping ground is between the 365 and 315 levels north east, the stope under the 215 north east having become exhausted. In both the stopes from winze under 315 level and that over 365 cross cut the lode is opening up well, showing over all the stoping face, about 3 metres thickness of good quality quartz. The improved yield last month is to be ascribed partly to the ore broken in the stope, and partly that from the stopes at 400 level. In the No. 1 stope a quantity of quartz and pyritic ore, forming the upper half of the lode which had been left to support the roof over a considerable area, was stripped and yielded a large amount of high grade ore. In the No. 4 stope at this level the lode is being pinched by quartzite against the roof, but still shows nearly 3 metres thickness of quartz. In stope at 400 south west the lode carries a large amount of quartzite and is not so productive as formerly. The new stope at 435 level continues to open up well. The ore is breast, being now about 4 metres thick, though the footwall has not yet been reached. From level over 365 south west a stope is being carried up close to No. 1 shaft on a strong, massive body of quartz showing a fair amount of pyrites. Over the 265 level south west the lode in the stopes carries a large amount of schist and quartzite necessitating the handling of a large amount of sterile rock. Over the 235 south west also the lode in front stope carries a thick bar of schist, which splits the lode, so that the ore is confined to a branch against hanging and another against footwall. Some very good ore is, however, being broken in another stope over same level, the lode being 3 metres thick and composed of quartz with solid patches of pyrites throughout.

QUEEN CROSS REEF.—Copy of manager's report for fortnight ending March 6: Since my last report, Davis and party, contractors for sinking the vertical shaft, have sunk 11 feet, making the total depth from surface 744 feet, and below the timber 69 feet. Barrett and party, tributaries, are doing fairly well. We have not been able to haul any quartz for them as the paddock is not clear yet. All the other tributaries are doing fairly well. Everything in connection with the mine is in good working order.

QUEEN'S BIRTHDAY UNITED.—The following mail advice has been received from Mr. W. T. Hansford, the company's local secretary at Dunolly, dated 19th March:—Queen's Birthday Mine.—Main Shaft: Since last report works at the mine have been prosecuted with all vigour. At the main shaft the No. 5 level eastern drive has been extended 15 feet, with stone in face fully 2 feet wide, containing a lot of minerals, with a little gold seen at times in the stone. The work of cleaning up the main level on the western reef has been commenced, but there is a large quantity of stuff that will have to be shifted before much stone can be broken out of this drive. The new wire rope has been delivered at the mine, and will be placed on the winding drum to-day, and by Wednesday we expect to commence hauling the water from below No. 6 level, the No. 4 plunger at 800 feet having given out, we shall have to lower the 7 inches draw lift to the bottom, and bale the water with the tanks, and discharge same into No. 6 level, and it will be pumped to the surface with the 10 inch column. As soon as the No. 7 level is drained, it is our intention to have the level surveyed, and a crosscut put in east, which we believe will intersect the reef on the main wall. While the tanks are being used for baling, we shall have to suspend mining operations at this shaft, as the winding engine will be fully engaged with the tanks.—Queen's Birthday Mine, Centre Shaft: At the Centre shaft we have been engaged putting centres in to the bottom, and are now placing the skids in position; this work will be completed in about six days, when we shall at one place men below, and open up the levels and break out stone. The engine and machinery on this shaft is in first class order, and works splendidly. A hopper for holding quartz has been erected near the shaft, so that the stone

can be tipped into it, and the drays filled from beneath without the trouble and expense of handling.—Belgium and Perseverance Mine: Crosscut to Belgium reef has been driven 13 feet for the week, total from shaft 91 feet. Country driven through slate and sandstone. We expect to strike the reef about the end of this week. We hope the influx of water will not impede the work.

SANTA BARBARA.—The directors are in receipt of advices from Mr. T. S. Treloar, dated Paris, 4th, 18th, and 28th March: The mineral delivered at the spalling floors from the mine during the month of February amounted to 590 tons, of which 104 tons were rejected as refuse stone and 486 tons treated at the stamping mills. The total produce obtained was 1497 ounces of amalgamated gold, or equal to 3080 ounces per ton stamped. This produce of 1497 ounces of gold, valued at 8s. 6d. per ounce, amounts to £636 4s. 6d. sterling, and the estimated cost for the month, at exchange 10½d., amounted to £847 4s. 5d., thus showing an apparent loss of £210 19s. 11d. for the month of February; against this amount, however, of £210 19s. 11d., should be calculated an estimated gain of about £160 during February in respect of difference in exchange, thus leaving a balance of £50 19s. 11d., as estimated loss for the month. The mine captain reports as follows for February:—No. 8 stope south has been extended 1 fathom 3 feet; the lode in the beginning of the month was 6 feet wide, 3 feet of which was intermixed with sandstone and hornblende, but towards the end of the month it had opened out to 7 feet wide, and had also slightly improved in quality, the productive part being about 3½ feet wide. No. 9 stope south (upper half) has been extended 1 fathom 3 feet, until about the middle of the month the lode was without change to note, when it began to gradually improve in size and appearance, and at end of the month it averaged 8 feet wide, yielding on the whole mineral of fairly good quality. No. 9 stope north for 13 feet in height has been extended 2 feet, yielding stone of fair quality, but the lode appeared to be narrowing a little on the top part of this stoping at the end of the month.—No. 9 winze and shaft: Only a few holes have been blasted in the former towards the end of the month, and the latter has been under suspension throughout the month for want of explosives.—Timberwork: The timbermen have been engaged in cutting hitches and headings for the logs as required, fixing and renewing tramroad, repairing skiproad, changing socket in wire rope, pumping water from tanks and Holland's shaft. Seven logs put in No. 8 stope to keep up balk ground; three logs put in No. 9 stope and lathed with candlea poles and loaded with unproductive stone to carry tramroad in bottom of No. 8 level, and 24 feet run of tramroad relaid; one sleeper renewed under skiproad at landing brace, and 26 feet run of tramroad laid in No. 8 level; one skiproad changed, and one socket in wire rope renewed. The output of stone from the mine is 950 wagon loads, of which 448 came from the No. 8 stope, 388 from the No. 9 stope south, and 114 from the No. 9 stope north. The number of wagon loads per man drilling is 28.71, and the total number of holes drilled in the mine 1260, of which 534 were in the No. 8 stope, 575 in the No. 9 stope south, 112 in the No. 9 stope north, and 39 in the No. 9 winze. During the greater part of January and the first half of this month, pending arrangements for more explosives, the boring was limited; hence the smaller duty in comparison with the preceding months.

TASMANIAN CROWN SILVER.—Manager's report dated 16th March: Prospect shaft: Since our last report this shaft has been sunk a further depth of 6 feet, making a total of 73 feet 6 inches. The air then became very bad, and as the pipes in No. 2 level had carried away most of the water, both from this shaft and from No. 1 level, we thought it advisable to withdraw the men, and resume driving No. 1 level.—Main Shaft, No. 1 level: This work, which was stopped on account of pressure of water, has now been resumed. A contract was let to the party from the Prospect shaft, and up to date 43 feet 6 inches have been driven, leaving a distance of 73 feet still to be driven to connect with Prospect shaft. For the first 20 feet the level passed through soft decomposed schist mixed with gossan, carrying a little lead ore, and for the next 23 feet through soft carbonate of iron, also carrying galena in small quantities throughout. We cannot judge of the extent of this formation yet, as we have not passed through it. Our object now is to press on this drive to connect with Prospect shaft to secure good ventilation and complete drainage to this level, when we shall be in a position to explore the ore body and discover its value. In driving this level we have so far relieved the water in the Prospect shaft that we found it necessary to stop the pump there. Diamond drill which was fixed about a fortnight ago made a start and bored several feet, when an accident happened to the air cylinder, which caused a suspension of the work. The injured part has been sent to Hobart for repairs, and we expect to resume work early next week.—Geo. R. Tilly, manager.

TRANSVAAL GOLD EXPLORATION AND LAND.—Summary of mining operations for month of February:—Total ore extracted, 761 tons, of which 44 tons from Theta assayed 5 ounces 17 dwts. per ton.—Theta Mine: Drivage, 262 feet; 150 feet in ore averaging 42 inches thick.—Beta Mine: Drivage, 318 feet; 239 feet in ore, averaging 6 inches thick; quality of ore improving.—Nu: Extraction for month, 80 tons; average assay value, 4 ounces (one lot of 6 tons assayed 15 ounces 13 dwts.).—Chi South: Drivage, 309 feet; 268 feet in ore averaging 26½ inches thick.—Prospecting Pit: Drivage, 234 feet, in ore averaging 6½ inches thick. Prospecting was also continued at Kameel's Creek (below present workings) on Columbian Hill, and to the north of Nu, where several good nuggets have been picked up.

VICTORIA AND QUEEN GOLD.—Copy of manager's report for fortnight ending March 7: During the past fortnight your underlie shaft has been sunk a further depth of 17 feet, making total from plat 100 feet, which gives the contractors 1 foot over their contract. The reef in the bottom of the shaft is from 18 to 20 inches of a white nature, and shows coarse gold in the eastern end. The slide at present is more than half way across the shaft. I think it would be advisable to open out a drive about 85 feet from plat. Canty and party have sunk your winze a further depth of 10 feet, which makes total from level 73 feet. The reef is about 6 inches. I have started a crosscut on the slide for the hanging wall reef and have driven it 9 feet. I would recommend letting this drive on contract. We have not much more ground to stope, as we are getting up near the boundary. I have started two under-hand stopes east of shaft, the reef varies from 3 to 8 inches of fair quality stone. Mr. Gordon is making fair progress with the engine; he has the two drums and engine beds fixed in position, and the two carpenters are getting on well with the engine shed. It is expected that the brickwork will be finished by the middle of next week. Gracey and party are getting on well with the poppet legs. We have hauled 10 tons during the fortnight, and crushed 124 tons, which gave a yield of 130 ounces retorted. We are still crushing. Machinery in good working order. Since writing the above we have passed through the slide in the underlie shaft, and met a reef about 1 foot thick carrying mineral.

VICTORY (Charters Towers).—Copy of mining manager's report for fortnight ending 10th March:—No. 1 Shaft: Footwall drive at No. 6 level driven south 11 feet, total 53. Reef pinched out; driven north 8 feet; total 67 feet. Reef here very small, about 3 inches. Stopes above average 10 inches medium quality. Stopes at No. 7 level 3 to 9 inches medium. Stopes No. 11 south 12 inches poor quality. Stopes on Papuan reef 3 to 9 inches good. Raised 45 tons. Started two men 5th inst. to drive Papuan Company's No. 6 level into Victory Company's ground, have since laid 130 feet of truck road, and driven 3 feet; there are 10 inches of good stone showing in face.—No. 2 Shaft: Underlie sunk 14 feet, total 200 feet. Reef in bottom 4 feet. Think there is an improvement in quality. More mineral showing in it. No. 5 east level driven 15 feet, total 83 feet, 2 feet of medium quality stone in face. Stopes above 6 to 30 inches fair quality. Winze in No. 4 east sunk 16 feet, total 52 feet. Reef in bottom 3 feet; good quality. Cross drive in this level driven 18 feet, total 104. Still following fault. Country hard on western side; 3 feet of formation on eastern side. Clearing out and timbering No. 2 west. Expect to start driving here next week.—No. 1 West: Cross drive here driven 8 feet, total 69 feet from main level. Country hard. No. 1A west driven 6 feet, total 60 feet. Country very hard and bad for shooting. Raised 400 tons.

BENDIGO GOLD FIELD.

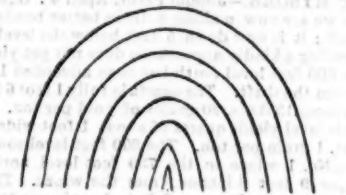
By H. R. WILLIAMS, M.P., Ex-Minister of Mines, Victoria.

IV.
(Concluded from page 395.)

THERE is not the least shadow of doubt that the whole of Mr. Dunn's special report is constructed on the model furnished by Mr. William Nicholas to your valuable Journal in 1884, and so far from discovering a key to unlock the hidden secrets of the Bendigo Gold Field, he even turned the key supplied him the wrong way, thereby causing an intellectual deadlock, a literary olla podrida, which required the knowledge that comes from experience to expose it. The following diagrams of Messrs. Nicholas and Dunn respectively will speak for themselves, with this explanation, however, that Mr. Dunn's auriferous zones diagram is a very poor illustration of what really does exist. If any such things as gold-bearing zones are found at all, the true figure is given by Mr. Nicholas in *The Mining Journal* of 1884, and the pity of it is that as Mr. Dunn followed Mr. Nicholas so closely in the greater part of his special report to the Mining Department, he did not give a true copy of diagram No. 22 in the Golden Quartz Reefs of Australia, instead of Mr. Dunn's misleading Fig. 4 as below:—



FIG. 8.—E. J. DUNN.



No. 23.—W. NICHOLAS, Golden Quartz Reefs of Australia.



FIG. 4.—FROM E. J. DUNN'S SPECIAL REPORT.



FROM W. NICHOLAS'S Golden Quartz Reefs of Australia.

As to the family likeness between Figs. 8 and 32, comment is unnecessary. Before the appearance of "my monograph" on the Bendigo Gold Field we were led to believe that a great discovery had been made—a new key found; but lo! the mountain in labour brought forth a mouse in the shape of facts from 10 to 40 years old, dressed up in the dubious verbiage of Mr. E. J. Dunn.

As an old resident of 34 years' standing I wrote to the local press on this precious report, and proved very conclusively that Mr. Dunn's charge of ignorance against the miners of Bendigo could not be sustained; and that, on the contrary, the weakness he ascribed to them was an attribute of his own. The mining engineers, the mining managers, the mining authorities and miners, and the other persons interested in mining generally, who read your old-established and valuable *Mining Journal*, must be the judges as to the source of Mr. Dunn's inspiration.

GOLD IN THE YUDANAMUTANA DISTRICT.—A correspondent of the *Adelaide Observer* writes:—"Referring to Sir John Downer's proposed scheme for assisting the unemployed by providing them with the means of prospecting for gold it may not be out of place to again draw attention to the auriferous country between Yudanamutana and the Freeling Heights. Wallace's Gully, situated not far from the Stanley Gold Mine, was found and worked by John Wallace about four years ago, and is still turning out some gold, although now nearly worked out. It is impossible to ascertain what quantity of gold has been taken from this place, but Wallace himself is known to have got about 120 ounces. Two other gullies near Wallace's contain gold, and there is a very large extent of gold-bearing country in the neighbourhood, colours being obtainable in almost any of the creeks, and if the land were thoroughly prospected there is no reason why other gullies equally as rich as Wallace's should not be discovered. There are now eleven prospectors camped at the Daly Well, and some half dozen at the Stanley Gold Mine. About half of these men are trying new ground, and the others work at Wallace's. Near Yudanamutana Mine there are several places where men might make wages if water were available, and at present some prospectors about there are making "tucker." At Bolla-Bollana, which appears to be highly auriferous country, two men have been working for a few weeks, and have met with fair success, some 3 ounces of good-quality gold having been obtained. In addition to the large extent of alluvial ground in the district many promising reefs are known to exist, and doubtless many others are to be discovered by a systematic search. The Stanley gold reef is undoubtedly the richest ever found in the North. It is of great extent, being very plainly defined on the surface for at least 1,000 yards in length, and 100 feet in width at its widest part. This reef has been prospected for a considerable time—nearly two years—and gold exists along its entire length. The reef is chiefly composed of ironstone, and assays have shown that some of the lode stuff is very rich, one exceptionally good sample of gossan iron having yielded as high as 87 ozs. to the ton while bulk assays from another part of the reef have proved the lode to contain from 1 oz. to 2 ozs. of gold per ton. Work is still being carried on, and the lode improves in width and richness with depth. It is considered by experts that this mine will pay well as soon as machinery is placed on the ground, the McArthur-Forrest process being well adapted for the class of ore the lode consists of. It may be stated, in conclusion, that from Bolla-Bollana to the Freeling Heights, a distance of about twenty miles, a belt of gold-bearing country is known to exist, and sooner or later this in all probability will be the richest gold-mining district in South Australia."

HUNTING LOST MINES.—Hunting for lost mines seems to be a prominent industry at present. According to stories told by some old timers, one of these fabulously rich properties is supposed to exist somewhere within a few miles of Prescott, to the south west of the town. The story, as told to the *Journal-Miner*, is to the effect that away back in the early '70's, "when Indians were bad" in the country, a detachment of troops was sent out to camp on the old Indian trail running from Skull Valley to Lynx Creek, to the east of the town. The troops remained in camp for several days, and broke the monotony of camp life by prospecting for gold in the immediate vicinity. On their return to the post, it is said, they brought in a lot of gold, which they obtained by grinding the ore between rocks. An officer was about to accompany some of the troops back to the spot for the purpose of locating some claims, when urgent marching orders were issued calling him with his troops out after the hostiles. When the campaign was over, he and his command were stationed at another post, and never returned to Whipple again, although he wrote that he intended to again visit this section and hunt for gold from which his soldiers obtained this fabulously rich ore. Of ledge from which the ore was supposed to have been obtained, but nothing like a thorough prospecting of the country was had. There are a number of ledges in that section of the country, some of which have been partially prospected, but as yet nothing of any value has ever been obtained in any of them. A fortune may yet await the lucky discoverer of the ledge from which the soldiers obtained their rich ores.

CLEVELAND MINERS' WAGES.—On Tuesday a deputation from the Cleveland Miners' Association met the mine owners at Middleburgh, Mr. David Dale presiding, and renewed their application for a general advance of 7½ per cent. in wages and ½ per cent. per ton advance for machine fillers. The owners stated that they were unable to grant the increase under the present condition of trade, but were willing to refer the question to arbitration. The deputation intimated that they would lay the owners' reply before the men.

BANKING.

ESTABLISHED 1851.

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SOUTHAMPTON BUILDINGS, CHANCERY LANE, LONDON.
TWO-AND-A-HALF per CENT. INTEREST allowed on DEPOSITS repayable on Demand.
TWO per CENT. on CURRENT ACCOUNTS on the minimum monthly balances, when not drawn below £100.

SAVINGS DEPARTMENT.
For the encouragement of Thrift, the Bank receives small sums on Deposit and allows interest monthly on each completed £1.
The Birkbeck Almanack, with full particulars, post free.
FRANCIS RAVENSCROFT, Manager.

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SLATE AND SLAB QUARRY COMPANY (LIMITED).

WANTED, QUARRY ENGINEER, to take £500 or £1000 in shares in thorough sound concern, with seat on Board. Object, further development.
Apply, "MANAGING DIRECTOR," care of MINING JOURNAL, 18, Finch Lane, E.C.

INVESTMENT.

CAPITALISTS WANTED to take part in exploitation of rich COPPER MINING PROPERTIES in Scandinavia. Splendid prospects.
Address, "SWEDEN," MINING JOURNAL Office, 18, Finch Lane, London, E.C.

A MALGAMATOR required IMMEDIATELY for GOLD MINE on West Coast of Africa. Must have had practical experience in milling and amalgamation.

Apply by letter, giving references, stating age and salary required (all found), to "V 810," at Shelley's Advertising Offices, 38, Gracechurch Street, London, E.C.

WANTED, TENDERS for BORING (deep) for COAL in North Staffordshire.
For particulars address "H. and H.," MINING JOURNAL Office, 18, Finch Lane, London, E.C.

WANTED, COPPER ORE, MATTE, REGULUS, ALLOYS, or OLD METALS of any kind, also SILVER ORES, any quantity and regular supplies, PURCHASED for CASH. Send samples and full particulars. The correspondence of mine owners and others in any part of the world invited.

WILLIAM ELMORE, 13, Bond Street, Leeds.
Telegrams—"Copper," Leeds.

FOR SALE.

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MINE TO BE SOLD.

THE RIGHT OF WORKING beds of COPPER and NICKEL ORE in the Parish of Gudmandra, in the district of Vester-norland, is OFFERED to those interested therein. The beds are situated at about three kilometres distance from the Angerman River, and at an equal distance from the Hernösand-Solleftea Railway. The necessary documents, establishing the right of proprietorship, are at the disposal of intending purchasers at the undersigned proprietors.

P. E. MELANDER,
Frans, Sweden (G. 14,468.)

SPAIN.

FOR SALE, BY PRIVATE BARGAIN, extensive and valuable SILVER LEAD MINES, near Belalcazar, Cordoba, Spain.

The Mines are economical to work, and are in good going order. Latest assays show 67½ ounces of silver per ton, and 82 per cent. of lead. The machinery, &c., has cost about £18,000 and comprises 4 large Engines (pumping and hauling) 2 Cornish boilers, 2 Roots boilers, portable engine, dressing machinery, iron houses, pitwork, rails, stores, furniture, &c.

By dismantling and realising the machinery and stores either in Spain, or by shipment to South African mining centres, or elsewhere, a handsome profit can be obtained, or with additional capital the mines will prove a lucrative investment.

Up to 30th April, 1894, the whole is offered in one lot at the extremely low price of £2000. Offers may also be lodged for any item separately, but the lowest or any offer may not be accepted.
Copies of Inventory and other particulars may be obtained from JOHN MARR and SON, C.A., 125, St. Vincent Street, Glasgow, or from MARR, WRIGHT, and CO., 4, King Street, Cheapside, London, E.C.

OLD MACHINERY.

FOR SALE, for breaking up, a large pair of 40-inch HORIZONTAL ENGINES, with massive bed-plate.
For particulars apply at the Great Western Collieries, Pontypriid.

SHIPPING.

UNION LINE.



FOR SOUTH AFRICAN GOLD FIELDS.—WEEKLY SERVICE.—CAPE OF GOOD HOPE, NATAL, and EAST AFRICAN ROYAL MAIL STEAMERS.—The UNION STEAMSHIP COMPANY'S ROYAL MAIL and INTER-MEDIATE STEAMERS will sail as follows for the SOUTH and EAST AFRICAN PORTS, to ZANZIBAR, calling at LISBON, MADEIRA, and TENERIFE.

Steamers.	Antwerp.	Rotterdam.	Hamburg.	Southampton.
Greek.....	April 22	—	April 28	May 5
Tartar.....	—	—	May 12	May 19
18 Spartan.....	—	May 6	—	May 26
18 Scot (twin screw)	—	—	—	—

Free railway tickets from London and Plymouth to Southampton.
All Steamers now leave Southampton on Saturday.
The Union Line Express is despatched from Waterloo Station (Main Line Platform) every Saturday.

RETURN TICKETS ISSUED.

Apply to the UNION STEAMSHIP COMPANY (Limited), Canute Road, Southampton; 14, Cockspur Street, London, S.W.; and South African House, 94 to 96, Bishopsgate Street Within, London, E.C.

CASTLE LINE.—CAPE & NATAL MAILS.



WEEKLY SERVICE FOR THE GOLD FIELDS OF SOUTH AFRICA.—The CASTLE COMPANY'S STEAMERS leave LONDON (East India Dock Basin, Blackwall) every FRIDAY, and sail from SOUTHAMPTON every SATURDAY.

Steamers.	London.	Southampton.
Tantalum Castle (via Madeira) ...	May 4	May 5
Lismore Castle (via Grand Canary) ...	May 11	May 12
Bawarden Castle (via Madeira) ...	May 18	May 19
18 Doune Castle (via Grand Canary and St. Helena) ...	May 25	May 26

* This Steamer takes Passengers and Cargo to Mauritius.

Return tickets to all Ports.

Free Tickets by Rail from Waterloo to Southampton.
Apply to DONALD CURRIE and Co., 3, Fenchurch Street, London, E.C.

ENTERTAINMENTS.

GAIETY THEATRE.

LESSEE and MANAGER, GEORGE EDWARDS.—TO-NIGHT and every Evening, at 8, a SECOND EDITION of the successful Burlesque "DON JUAN," with full Gaiety Company, including Miss Millie Hylton, Miss Lillian Stanley, Miss Topsy Sinden, and Miss Katie Seymour; Mr. Robert Pateman, Mr. Edmund Payne, and Mr. Arthur Roberts. A Series of entirely New Humorous Tableaux Vivants in the Third Act. Doors open 7.45. MATINEE 10-day (SATURDAY), at 2.

TRAFALGAR.

PROPRIETORS, Mr. and Mrs. WYATT, Manager, A. Blackmore.—TO-NIGHT at 8.15, the Musical Farce Comedy, "GO-BANG," by Adrian Ross and Osmond Carr, produced by F. Parker. Lettie Lind, Jessie Bond, John L. Shine, Harry Grattan, and full company. MATINEE, TO-DAY (SATURDAY), at 2.30.

EMPIRE.

TO-NIGHT, TWO GRAND BALLETS. "KATRINA" at 7.50, and the up-to-date Ballet "THE GIRL I LEFT BEHIND ME," 10.25, by Mr. George Edwards; arranged by Madame Katti Lanner; supported by Mdle. Brambilla, Signor Vincenti and Signorina Cavallazzi. Grand Varieties, Vanoni. The Avolo Boys, Marie Lloyd, Paul Cinquevalli, &c., &c. Doors open at 7.30. TO-NIGHT, at 9.30, an entirely new series of "LIVING PICTURES," another Empire success.

COMPANIES AND LEGAL ANNOUNCEMENTS.

*. Advertisements are inserted in this column at the rate of 8d. per line with a minimum charge of 7s. 6d.

MASON AND BARRY (LIMITED).

(SAN DOMINGOS MINE, PORTUGAL).

NOTICE IS HEREBY GIVEN that the SECOND ANNUAL or THIRD ORDINARY GENERAL MEETING of the Members of Mason and Barry (Limited) will be held at the Cannon Street Hotel, London, E.C., on MONDAY, May 7th, at Two o'clock precisely, for the purpose of Receiving the Directors' Report for the year 1893; approving the General Balance-sheet at 31st December, 1893; declaring a Dividend for the year 1893; the Re-election or Appointment of Directors, and the Appointment of Auditors.

The holders of "Share Warrants to Bearer" will be furnished with a certificate admitting them to the meeting upon their depositing share warrants representing not less than 10 shares at the office of the company three days before the meeting, together with a notice in writing stating their names and addresses.

The Transfer Books of the Company will be closed from Saturday, the 21st April, to Saturday, the 8th May, both days inclusive.

By Order of the Board,

JOHN G. BARRY, F.C.A., Secretary.

87, Cannon Street, London, E.C., 23rd April, 1894.

MASON AND BARRY (LIMITED).

(SAN DOMINGOS MINE, PORTUGAL).

NOTICE IS HEREBY GIVEN, that an EXTRAORDINARY GENERAL MEETING of the above-named company will be held at the Terminus Hotel, Cannon Street, in the City of London, on MONDAY, the 7th day of May, 1894, at a Quarter past Two o'clock in the afternoon, or so soon thereafter as the business of the Ordinary Annual General Meeting, to be held at Two o'clock on the same day, shall have been transacted, for the purpose of considering, and, if thought fit, passing the resolution following—that is to say:—

Resolved—
"That the capital of the Company be reduced from £1,050,000, divided into 210,000 shares of £5 each, to £840,000, divided into 210,000 shares of £4 each, and that such reduction be effected by returning to the holders of the shares that have been issued, and to the parties entitled to have fully-paid shares issued to them, paid up capital to the extent of £1 per share, and by reducing the nominal amount of all the shares from £5 to £4."

Should the above Resolution be passed by the requisite majority, it will be submitted for confirmation as a Special Resolution to a Second Extraordinary General Meeting, which will be subsequently convened.

The holders of "Share Warrants to Bearer" will be furnished with a certificate admitting them to the meeting upon their depositing Share Warrants, representing not less than 10 shares, at the Office of the Company three days before the meeting, together with a notice in writing stating their names and addresses.

By Order of the Board,

JOHN G. BARRY, F.C.A., Secretary.
87, Cannon Street, London, E.C., dated this 23rd day of April, 1894.

SALES BY AUCTION.

*. Advertisements are inserted in this column at the rate of 8d. per line with a minimum charge of 4s.

IBSTOCK AND OAKTHORPE, LEICESTERSHIRE AND DERBYSHIRE.

SALE OF TWO LARGE AND IMPORTANT MINERAL ESTATES.

Including VALUABLE AGRICULTURAL and BUILDING LAND TO BE SOLD, BY AUCTION, by WARNER, SHEPPARD, and WADE, at the Midland Hotel, Derby, on WEDNESDAY, May 2nd, 1894, at Three o'clock in the afternoon prompt, subject to such Conditions of Sale as will be then produced, and in the following or such other Lot or Lots as may be determined upon at the time of Sale.

LOT 1.

An Exceedingly Valuable MINERAL ESTATE at Ibstock, a rapidly rising and improving Town, in the well-known Leicestershire Coalfield, containing in the aggregate 244 acres 1 rood 13 perches of VIRGIN MINES, situated in the immediate vicinity of thriving Collieries, and near two Railway Stations, comprising—

The MINES of COAL, IRONSTONE, FIRECLAY, and other MINES and MINERALS lying under Lands at Ibstock (except the surface clay of certain portions thereof, containing together 25 acres 2 roods 24 perches or thereabouts). Together with full liberty to work the said Mines and Minerals by means only of outstroke or underground workings through any adjoining Mines or Lands acquired or authorised to be used for that purpose, and with full liberty, also by means of the Pit or Pits and underground workings by which the said Mines shall be worked, to work any other Mines, by entering only upon the surface of any Land acquired for the purpose, making compensation (to be settled by arbitration) for any damage to the surface or any buildings which stood thereon on the 26th May, 1874, but not making any compensation for any Buildings erected since that date, except Buildings (if any) now or hereafter to be erected on the site of Buildings which stood thereon on that date, nor for any damage to the surface of, or to any Buildings whatsoever (whenever erected) upon the several pieces of Land.

The Purchaser of Lot 1 will have the option of purchasing Lot 2 at a price to be named by the Auctioneers before the Sale.

LOT 2.

The Surface of all those four several pieces of FREEHOLD LAND situate at Ibstock, containing together 32 acres 3 roods 2 perches, and respectively called Allotment Close, Donnington Pasture, and Great and Little Pasture Close.

This lot obviously provides an excellent site for a Plant for working the Mines described in Lot 1.

The Estate lies to the West of the Ibstock Colliery Company's old-established Colliery, and to the south-east of the Heather Colliery Company's Plant. Workings have extended close to the Boundary of this Property, and are stated to have left off with a face of work of excellent Coal.

There are also very valuable Beds of Surface and Fire Clays, except as to the said portions of Lot 1, in which the surface clay is reserved.

The Coalville and Hugglescote Branch of the Midland and L. and N.W. Railway Companies, which is connected with the main lines of those companies, runs within a few yards of the boundary of the estate.

LOT 3.

The FREEHOLD MINERAL ESTATE, comprising the well-known Farm, with commodious farm-houses, stabling, out-offices, extensive farm buildings, productive garden, homestead and premises, situate in the village of Oakthorpe, now in the occupation of Messrs. T. and H. Christian.

Also TWO COTTAGES, with gardens and premises thereunto adjoining, containing 1 rood 4 perches or thereabouts.

The whole containing 124 ACRES or thereabouts. Together with ALL THE MINES, beds and seams of coal, ironstone, fire clay, pot clay, and other mines and minerals, in and under the same premises, and under the Canal, Railway, and Public Highways intersecting and adjoining the same (which latter contain 6 acres 1 rood 23 poles of Mines or thereabouts), so far only as the vendors are entitled thereto.

And also ALL THE MINES OF COAL, and other Minerals in and under an adjoining field, containing 5 acres 3 roods 7 poles, or thereabouts, in the Parish of Donisthorpe, with power to work same mines, making compensation for surface damage.

There being EXTENSIVE FRONTAGES to the village street and to the neighbouring main roads, and the estate being in the vicinity of important working collieries, large portions of the above-mentioned lands are eligible situated for Building purposes and now probably RIFE FOR BUILDING.

The Ashby Canal winds through the estate, affording practically unlimited frontages for wharves; and the Ashby and Nuneaton Joint Railway also passes through the estate, affording direct connection with the Railway upon the estate itself.

The Mines of Coal consist of seams believed to contain a total thickness of 44 feet 10 inches.

It is also believed that the Stanhope Coal and the Kilburn seam exist below the above-mentioned seams.

The Main Coal at the Oakthorpe Pits (the nearest colliery to the estate) is only 125 yards from the surface.

LOT 4.

TWO COTTAGES, with large gardens adjoining thereto, containing 3 roods 28 perches, or thereabouts.

The mines and minerals under this Lot are reserved, together with full power to work the same from other lands without compensation.

LOT 5.

The SURFACE of all that PIECE of LAND, situate at Oakthorpe aforesaid, containing 2 acres 1 rood 38 perches, or thereabouts, with extensive frontages to the main road from Burton to Measham. (The mines under this land with power to work same from other lands without making compensation, are reserved.)

Together with all the Vendors' Interest in the mines under the adjoining land, containing 1 acre 21 perches or thereabouts.

The mines under Lots 4 and 5 will, in the first instance, be added to and offered in one Lot with Lot 3.

Plans and particulars, authority to view, mineral sections, and all other necessary information may be obtained of the

AUCTIONEERS, Halford Street, Leicester;

Mr. E. PERCY JOHNSON,

Solicitor, Dudley; and

Mr. JOHN STANLEY JONES,

Solicitor, Dudley.

TO LET.

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WINFORD MINES.—OCHRE, REDDING, LEAD. SIXTEEN ACRES TO LET, discovered by a company who already hold 18 acres.
Address, Rev. H. TRIPP, Winford, Bristol.

LIVERPOOL JOURNAL OF COMMERCE
Is the best FINANCIAL and COMMERCIAL PAPER in the Provinces.

Is now Enlarged to Eight Pages.
Contains more Commercial and Shipping News than any other Morning Paper.

Proprietors, CHARLES BIRCHALL, 39, Castle Street, Liverpool
LONDON OFFICE.—38, GRACECHURCH STREET.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of April 26 (4 o'clock), as follows:—We have had a very quiet market this week, and easier prices. Dolcoath fell to £6, chiefly owing to the run. To-day the market is steady, but inactive.—Following are quotations:—Carn Brea, 10½ to 10¾; Cook's Kitchen, ½ to 1½; Dolcoath, 72 to 74; East Pool, 10½ to 11½; Killfretth, 3½ to 3¾; South Condurow, ½ to ¾; South Crofty, 3½ to 3¾; South Wheal Frances, 1½ to 1¾; Tincroft, 12½ to 12¾; West Frances, 2 to 2½; West Kitt, 7 to 7½; Wheal Agar, 2 to 2½; Wheal Bassett, 3 to 3½; Wheal Grenville, 16½ to 16¾; Wheal Kitty (St. Agnes), ½ to ¾; Polberro, 1 to 1½.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (April 26) as follows:—The mining market is without any improvement, although tin is firmer, and prices show but little alteration with the exception of Dolcoath, which have dropped £7 on a fall of ground in the old "Samp" shaft. The sale of tin ores on Tuesday was rather disappointing, being £1 less, on the average, as compared with the preceding sale. To-day business mostly confined to the close of settlement. The following are closing prices:—Blue Hills, ½ to ¾; Carn Brea, 10½ to 10¾; Cook's Kitchen, 1 to 1½; Dolcoath, 72½ to 73; Devon Consols, 17s. to 18s.; East Pool, 10½ to 10¾; Killfretth, 3½ to 3¾; Levant, 5 to 5½; Phoenix United Mines, ½ to ¾; Polberro, ½ to 1; South Crofty, 3 to 3½; South Frances, 2½ to 2¾; Tincroft, 12½ to 12¾; West Frances, 2½ to 2¾; West Kitt, 6½ to 7; Wheal Agar, c.p., 2½ to 2¾; Wheal Bassett, c.p., 3 to 3½; Wheal Grenville, 15½ to 15¾; Wheal Kitty, c.p., 7s. to 8s.; Wheal Friendly, 2s. 6d. to 3s.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers, and Mining Share Dealers, Redruth, write under date of Thursday, April 26:—With the exception of Dolcoath, which have had a considerable fall, owing to the ran of ground in the engine shaft, the market has been fairly steady through the week, although the amount of business has not been large. Closing quotations herewith (four o'clock):—Carn Brea, 10½ to 10¾; Cook's Kitchen, ½ to 1½; Dolcoath, 72 to 74; East Pool, 10½ to 11; Killfretth, 3½ to 3¾; Phoenix, ½ to ¾; Polberro, 1 to 1½; South Condurow, ½ to ¾; South Crofty, 3 to 3½; South Frances, 1½ to 1¾; Tincroft, 12½ to 12¾; West Frances, 2 to 2½; West Kitt, 6½ to 7; Wheal Agar, 2 to 2½; Wheal Bassett, 2½ to 3½; Wheal Grenville, 15½ to 16½; Wheal Kitty, ½ to ¾. Tin, 71.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write, April 26, 1894 (noon):—The account—though light again—has required attention, and to that extent has stood in the way, perhaps, of new business. But, for the most part of the week, several departments of the market have been dull generally, notwithstanding that fairly distinct alterations have in some cases to be recorded. During the past few days Home Rails have come into favour from various causes—causes which the price of money tends to make factors—and, with few exceptions, amongst which only Great Northern A is noticeable, prices are better nearly all round. South Eastern A is to the front, with rise of 2 on the week, and others, after showing easier early in the week, finish with advances, as compared with last Thursday's quotations, as follow, viz., London and North-Western, 1 to 1½; Caledonian deferred, 1 ditto; ordinary, ¾; North-Eastern, ¾; North British new ordinary, ¾; Brighton A, ¾; and Great Western, ¾; besides others of less amount. The declines, besides York A, as mentioned, are only to the extent of ¼ or ½ in any case. Americans down to the carrying over dropped daily, but since carrying over they have mended a little. The changes on the week, therefore, are not severe on either side, but are yet mostly lower on the week. Higher: Milwaukee ¾, Norfolk Preference ¾, Denver Preference ¾, and Louisville ¾ to ¾. Lower: Central Pacific ¾, Atchison Income ¾, ditto Ordinary ¾, and several others, ranging from ¾ to ¾ down. In Canadian, Pacifics are unaltered, but Trunk issues are irregular. Guaranteed alone, with fall of 2½, are altered to any extent, the rest of the changes in the several other issues being evenly divided between higher and lower to the extent of ¼ to ¾, the latter fraction being in Second Preference and for the better. Mexican Rails are better, the ordinary ¾ and First Preference ¾. Second Preference, without business, are nominally ¾ higher. Consols are just the turn (1-16) lower on the week. The only alteration recorded here in Colonial Government Bonds, &c., is fall of 1½ in Queensland Inscribed stock. Home Corporation Stocks, &c., only mark changes in Newcastle Three and a-half per Cent., which is ½ and Liverpool Three and a-half per Cent. ½ to ¾ higher. Foreigners have latterly shown some strength, and finish with quotations showing variation to higher figures in a majority. Higher: Brazilian Four per Cent., 1½; ditto, Four and a-half per Cent., 1; Italian Rentes, 1½; Turkish 1854, ¾; Spanish Four per Cent., ¾ to ¾; Egyptian Unified, ¾; and Turkish Group IV., ¾. Lower: Argentine Six per Cent., ¾ to 1; ditto Five per Cent., ¾; Portuguese Three per Cent., ¾; and Uruguay Three and a-half per Cent., ¾. Miscellaneous markets have furnished only straggling dealings for the most part which add up to but a moderate total all together. There is no instance throughout the several departments in which activity can properly be said to have been displayed, the only cases in which anything like of the repeated dealings have taken place being in South Africa Chartered and Ship Canal shares, but for the past few days the dealings on the last-named have been singularly small and prices have hardly varied.

BANKS.—Variations are within very narrow limits, being confined to changes of 1-16 or ¼ on either side, with the exception of Bank of Liverpool, which are ½ down. Otherwise the rise and fall is counter-balanced.

INSURANCE.—A few dealings in Lancashires are all there are marked beyond quite solitary markings in two or three others. Here also the differences in current quotations are contradictory. Higher: Commercial Union, ½; Guardian, ¾; National Boiler, ¾; and Thames and Mersey, ¾. Lower: Royal, ¾; Maritime, ¾; British and Foreign Marine, ¾; Liverpool and London and Globe, ¾; and Manchester Fire, ¾ to 3-16.

COAL, IRON, &c. very quiet. Patent Nut and Bolt are ½ up, but the rest are lower where altered at all, which is in the following cases, viz., Bolckows fully paid ½ to ¾, ditto £12 paid 1-16th to ¾. John Browns ¾, Dorman Longs ¾, Richard Evans A ¾, and Staveley C ¾.

MINES.—Without business at all marked here; Mysore are ¾ higher, but De Beers are ½ to ¾, Great Laxey ¾. Burma Ruby 1-16th and Rio Tinto 1-16th lower.

COTTON SPINNING, &c. marked without improvement. Buyers hardly to be found, but no particular pressure on part of sellers wherewith to force down nominal prices.

TELEGRAPHS AND TELEPHONES.—Former better again for Anglo-American descriptions and Eastern Extension. Constructions, however, are 1, and Brazils ½ down. National Telephones are 1-16th down on the week.

BREWERIES.—Guinness' are 1 lower, but Allsopp's are ¾, Boddingtons ¾, and Massey's ¾ higher.

MISCELLANEOUS.—United Alkali have recovered some of their recent decline. Rylands and Sons are put ½ to ¾ better, and Northern Assets to quote about 1-6 up. On the other side, Gas Light and Coke are 2; Imperial Continental Gas, 1; Cunard Steamship, ¾; Bell's Asbestos, ¾; Suez Canal, ¾; Ship Canal ordinary, 1-16 to ¾; and ditto first debentures, 2 lower.

LATER (4 p.m.).—Home rails have been in demand again, Great Northern A particularly. Americans and Canadians opened pretty firm, but prices in many cases fell away latest figures here, whilst n much down, about the lowest of the day. The Mexican Railway dividend was a surprise, giving 1½ on first preference, and this issue came in for advancement in consequence. Ship Canals a little weaker on quotations at the close, though there has been very little done on them to-day.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (April 26), writes:—During the past week the market has been quiet. Trade reports show little alteration, but are still encouraging. The fortnightly settlement has been satisfactorily completed, and the rates of continuation to new account, May 11, are generally lighter.

In shares of coal, iron, and steel companies the principal alteration is a decline on Steel Company shares, notwithstanding the announcement that they have secured the bulk of the heavy castings for the new battleships. From 63s. the price drooped to 58s., and is now a little firmer. Bolckow Vaughan are at 11½; Ebbw Vale, 9; Niddrie, 52s.; Stewart and Clydesdale, 8½; and Wilsons and Clyde Coal, 9.

In shares of copper concerns business is quiet, and prices developing in sympathy with the market for the metal. The meeting of Mason and Barry will be on May 7. Tharsis have been sold from 98s. to 98s. 9d. com. div., and 93s. 6d. ex. div. Tinto have been steady about 15½.

In shares of gold and silver mines there has been less business doing, but prices are steady. Montana remain about 6s. The crushing returns from the Day Dawn, P.C., and Mosman companies are disappointing. Broken Hill Proprietary announce the usual monthly dividend of 1s. payable May 16. Victoria and Altamira 1st Preference shares offered. British South Africa Chartered declined to 33s. 6d., and Consolidated Gold Fields of South Africa to 47s. 6d., but both are now firmer. African Gold Recovery are at 28s. 6d.; American Belle, 2s.; Blue Spar, 1s.; Caratal, 9d.; Cassel, 17s.; Champion Reef, 76s. 3d.; Gold Fields of Mysore, 22s. 6d.; Kabaonga, 1s. 6d.; Mexican Gold and Silver Recovery, 12s.; Nouveau Monde, 4d.; Orita, 2s. 9d.; Sheba, 26s. 3d.; Springdale, 2s. 9d.; St. John del Rev, 23s. 9d.; Sunburst, 1s.; Tolima A, 8½; Virginia Transvaal, 3s. 9d.; Willoughby's Developments, 27s.; and West Argentine, 3s. 3d.

In shares of miscellaneous companies there is not much alteration to notice. In oil companies Broxburn are at 8½, Pampherton 6½, and Young's 26s. 6d. Field's Candle shares are at 5½, Nobel's Explosives 14½, Roburite Explosives 31s. 3d., and White Lead, 5s. 6d.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of April 26: In Railway stocks, Caledonian Deferred Converted and North British have shown most activity. The former has risen from 43 11-16 to 45, and the latter from 41 11-16 to 42½. A fair business has been transacted in Bank stocks. Bank of Scotland has declined from 328½ to 327, Commercial from 67½ to 67½. National has risen from 329½ to 330, Royal from 228½ to 229½. In Insurance shares, most attention has been given to North British and Mercantile, and to Scottish Union A. The former have fallen from 34 to 33½, and the latter from 79s. 9d. to 79s. Caledonian Fire and Life have receded from 29½ to 29½, Royal from 47½ to 46½. In Mining shares, Arncliffe Coal have risen from 25 to 26½. Marbella Iron have declined from 62s. to 58s., and Steel Company of Scotland from 62s. 3d. to 59s. 6d. Dalmeny Oil shares have risen from 11½ to 14. Broxburn have declined from 8½ to 8½.

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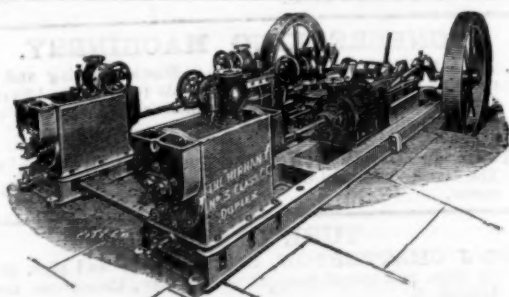
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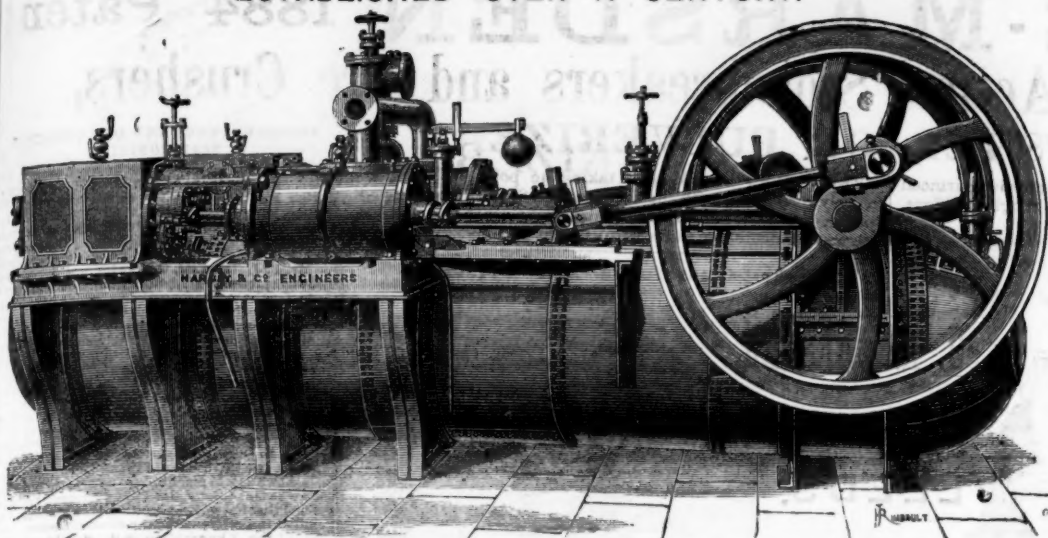
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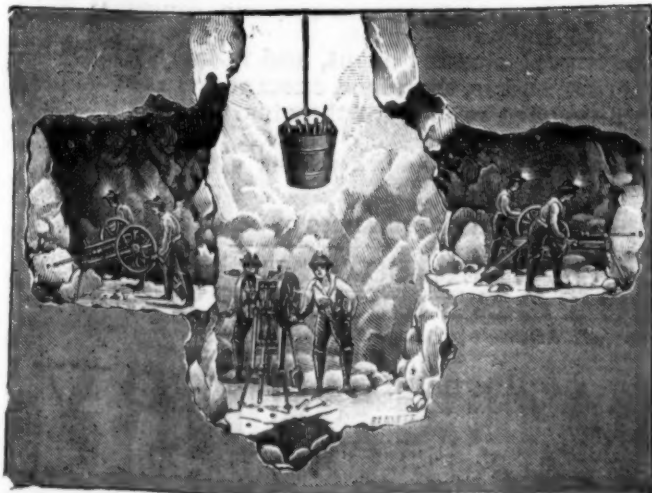
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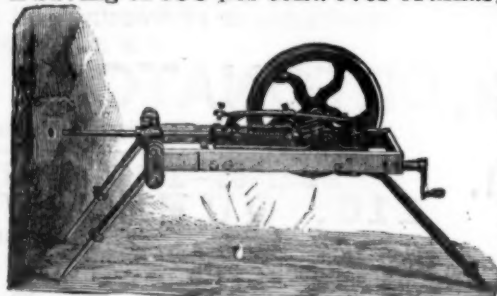
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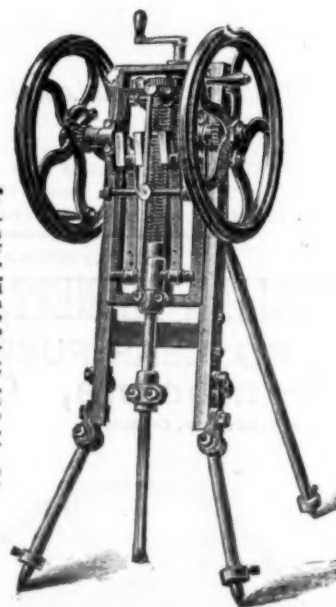
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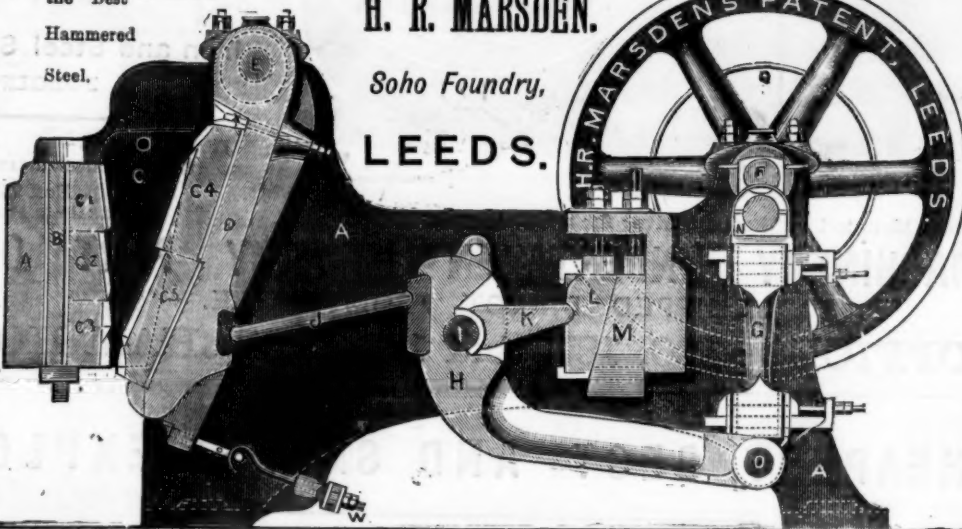
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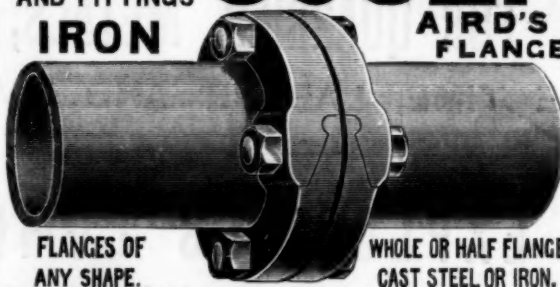
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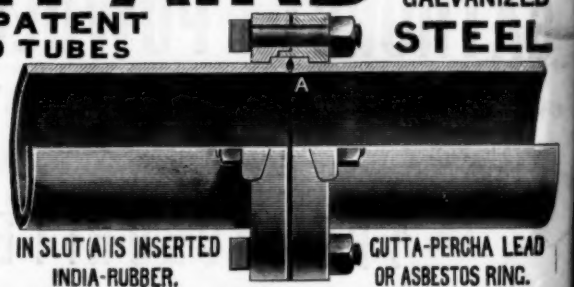
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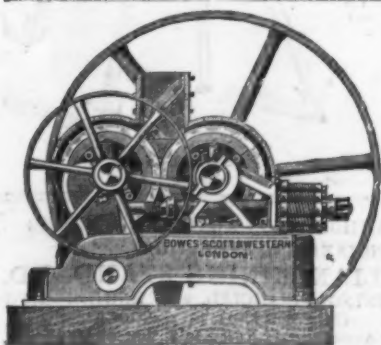
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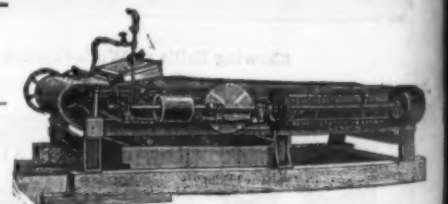
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